This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

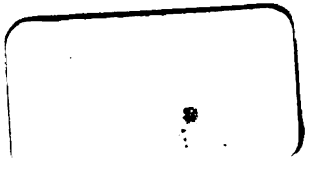
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Econ 6519.21.9

HARVARD
COLLEGE
LIBRARY



Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

67TH CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPORT
No. 408

THE AGRICULTURAL CRISIS AND ITS CAUSES

REPORT OF THE JOINT COMMISSION OF AGRICULTURAL INQUIRY

IN FOUR PARTS

PART I

SUBMITTED BY MR. ANDERSON

OCTOBER 15, 1921.—Ordered to be printed with illustrations

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

Digitized by Google

Ecm 6519.21.9

HARVARD COLLEGE LIBRARY
FROM THE
PRESIDENT'S OFFICE
OCT. 5, 1922

JOINT COMMISSION OF AGRICULTURAL INQUIRY,

UNITED STATES CONGRESS.

HOUSE MEMBERS.

SYDNEY ANDERSON, Minnesota, *Chairman.*
OGDEN L. MILLS, New York.
FRANK H. FUNK, Illinois.
HATTON W. SUMNERS, Texas.
PETER G. TEN EYCK, New York.
IRVING S. PAULL, *Secretary.*

SENATE MEMBERS.

IRVINE L. LENROOT, Wisconsin.
ARTHUR CAPPER, Kansas.
CHARLES L. McNARY, Oregon.
JOSEPH T. ROBINSON, Arkansas.
PAT HARRISON, Mississippi.
CLYDE L. KING, *Economist.*

LETTER OF TRANSMITTAL.

DECEMBER 9, 1921.

The PRESIDENT OF THE SENATE, and
The SPEAKER OF THE HOUSE OF REPRESENTATIVES:

In accordance with the provisions of Senate concurrent resolution 4, I transmit herewith Part 1 of the Report of the Joint Commission of Agricultural Inquiry, entitled, "The Agricultural Crisis and Its Causes."

It is expected that the remainder of the Report will be issued in three parts, as follows: Part 2, Credit; Part 3, Transportation; Part 4, Distribution and Marketing.

Respectfully submitted.

SYDNEY ANDERSON, *Chairman.*

HARVARD UNIVERSITY LIBRARY 1975

11-99
23

Digitized by Google

CONTENTS.

	Page.
Introduction	9
Summary	10
Chapter 1.—The farmer's dollar in 1920–21	26
Chapter 2.—The relation of prices of agricultural commodities to prices of other commodities	34
Chapter 3.—Relative growth of agriculture and other industries in quantity production	42
Chapter 4.—Wages and incomes in agriculture and other industries	48
Chapter 5.—The break in prices in different countries and industries	58
Chapter 6.—Was the break in farm prices due to overproduction of farm products	84
Chapter 7.—Exports and imports of farm products and their effect upon prices.	89
Chapter 8.—Production and consumption of farm products and their relation to prices	156
Chapter 9.—Factors influencing cost of production	180
Chapter 10.—Farm mortgages	205
Chapter 11.—Farm tenancy	213
Chapter 12.—Transportation	224
Chapter 13.—Retail prices	225

LIST OF TABLES.

Chapter I.

A–1. The purchasing power of all farm products, in terms of all commodities, excluding food and farm products	27
A–2. The purchasing power of all farm products, in terms of all commodities, including food and farm products	28
A–3. Index numbers of wholesale prices	28–29–30
A–4. Purchasing power of farmer's dollar	31
A–5. The price and the purchasing power of stated farm products, in April and May of 1921	31
A–6. The purchasing power of farm products	33
A–7. The purchasing power of farm products	33

Chapter II.

B–1. Relative wholesale prices of live stock	36
B–2. Relative wholesale prices of 10 leading farm crops	36

Chapter III.

C–1. Quantity, value, and prices of crops, 1909 and 1899	43
C–2. Quantity, value, and prices of principal crops in the United States, 1919 and 1909	44
C–3. Acreage and production of principal crops in the United States, 1919 and 1909	45
C–4. Index numbers of the growth of population and the physical volume of production of manufactured products and of mining and agriculture, 1899 to 1919	46
C–5. The relative production of farm products, mineral products, manufactured products, transportation and all commodities, by years, 1890–1919	47

Digitized by Google

CHAPTER IV.

Page.
D-1. The national income in money of variable and in money of constant purchasing power, by years, 1909–1919 49
D-2. Per capita estimate of the national income in money of variable and in money of constant purchasing power, by years, 1909–1919 50
D-3. The estimated national and per capita income of various countries at the outbreak of war in 1914, and the approximate accuracy of the respective estimates 50
D-4. An estimate of the total net value product of agriculture in the continental United States 51
D-5. The per cent of the net value product of all industries in the United States, produced by agriculture 51
D-6. The percentages of net value product of various branches of industry, received by employees as payment for services, 1909–1918 52
D-7. Distribution of net personal incomes reported to the Bureau of Internal Revenue in 1917 and in 1918, before and after deduction of Federal income taxes 53
D-8. An estimate of the rewards for labor, risk and management received by the farmers of the continental United States, 1909–1920 54
D-9. Rewards from labor and management, and from property, with total rewards received by the farmers of the United States, 1909–1920 54
D-10. The average annual earnings of employees normally engaged in the given industries 56
D-11. Average annual reward of farmers engaged in agriculture (exclusive of hired help) compared with the average annual earnings per employee in stated industries, for continental United States, 1909–1918, at current money rates, and at prices of 1913 57

CHAPTER V.

E-1. Index numbers of wholesale prices (all commodities) in 11 countries 58
E-2. Relative wholesale prices of groups of commodities and of specific commodities 60
E-3. The relative price and the relative production of bituminous coal, 1913–1920 61
E-4. Exports of bituminous coal from the United States for years ending June 30, 1913 to 1920 61
E-5. Average earnings of employees in the iron and steel industry 62
E-6. Actual and relative production of coal, coke, pig iron, crude steel, copper, and zinc 63–64
E-7. Actual and relative prices of structural steel 65
E-8. Building contracts awarded 67
E-9. Building contracts awarded (index numbers) 68
E-10. Building contracts awarded (numerical data) 69
E-11. Building contracts awarded (index numbers) 70
E-12. Exports of the United States, United Kingdom, France, Italy, and Japan, 1919–1921 76
E-13. Business conditions other than agriculture 78–79
E-14. Production of manufactures (in United States unless otherwise indicated) 80
E-15. Monthly average net tonnage of vessels cleared from ports of selected countries 81
E-16. Exports and imports by groups of commodities 82–83

CHAPTER VI.

F-1. Actual and relative per capita production of wheat, corn, and cotton, and the number of sheep, hogs, cattle, and milk cows per 1,000 population .. 85
F-2. Animals slaughtered in the United States, 1907–1920 86
F-3. Production of grain in the United States 87
F-4. An ertimate for the continental United States of the output of agricultural products per inhabitant and per person engaged in agriculture 88

CHAPTER VII.

G-1. Production of wheat and relative production by years 1910–1920 89
G-2. The actual and relative export, import, reexport, and net export of wheat. 90
G-3. Production of wheat flour, 1914–1921 91

Digitized by Google

Page.
G–4. The actual and relative export, import, reexport, and net export of wheat flour 91–92
G–5. The actual and relative export, import, reexport, and net export of wheat and wheat flour 93
G–6. Actual price series composing the price index of wheat and wheat flour .. 96
G–7. Wheat and wheat flour production, exports, imports, consumption, and price 98–99
G–8. Production of corn 99
G–9. The actual and relative exports, imports, reexports, and net exports of corn and corn meal 99–100
G–10. Actual and relative production of oats 100
G–11. The actual and relative exports, imports, reexports, and net exports of oats and oatmeal 101
G–12. Rye 102
G–13. The actual and relative exports of rye and rye flour 102
G–14. Rice 103
G–15. The actual and relative exports, imports, reexports, and net exports and net imports of rice 104
G–16. The actual and relative export, import, reexport, and net export of all grains 105
G–17. Cotton 106
G–18. Exports and imports of unmanufactured cotton 106–107
G–19. The consumption of cotton in the United States 108
G–20. Average monthly cotton consumption in typical mills in the United States 108
G–21. Supply and consumption of cotton, 1910–1920, linters excluded, in bales of 500 pounds each 108
G–22. Foreign spinners' takings of American cotton from August 1 to April 29. 109
G–23. Deliveries to spinners in Great Britain from August 1 to April 29 109
G–24. Production of wool 109
G–25. The actual and relative export, import, reexport, and net import of wool, 1909–1921 110
G–26. The consumption of wool in the United States, 1913–1921 111
G–27. Meat production, distribution and supply, beef and veal, July, 1919–May, 1921 113
G–28. Receipts and shipments of live stock at 15 western markets 114
G–29. Estimated annual production, exports, imports, and consumption of beef and veal in the United States 116
G–30. Exports, imports, reexports, and net exports of beef and beef products .. 117–118
G–31. Relative exports, imports, reexports, and net exports of beef and beef products 118
G–32. The actual export of beef and beef products 120
G–33. Beef and veal production, export, import, consumption and price 124–125
G–34. Actual price series composing the price index of beef and beef products 126–127
G–35. The actual and relative production of leather products, 1918–1921 128
G–36. Estimated annual production, exports, imports, and consumption of pork in the United States 129
G–37. Meat production, distribution and supply, pork 130
G–38. Actual and relative export, import, reexport, and net export of pork and pork products 131–132–133
G–39. The actual export of pork and pork products from the United States .. 134–135
G–40. Pork and lard 137
G–41. Pork 139–140
G–42. Price series composing the price index of pork and pork products 142
G–43. Estimated annual production, exports, imports, and consumption of mutton and lamb in United States 143
G–44. Estimated annual production, exports, imports, and consumption of lard and all meats in United States 144
G–45. Live-stock consumption per capita, 1907–1920 145
G–46. Production, storage, and price of butter 145
G–47. The actual and relative export, import, reexport, and net export of all butter from United States 146
G–48. Production, storage, and price of full cream cheese, New York, 1918 to 1921 147

Digitized by Google

Page.

G–49. The actual and relative export, import, reexport, and net export of all cheese from United States..... 147–148
G–50. The actual and relative exports, imports, reexports, and net exports of condensed milk from United States, 1909–1921..... 149
G–51. The actual and relative export, import, reexport, and net export of all dairy products from United States..... 150
G–52. The total actual and relative exports, imports, reexports, and net exports of vegetable oils..... 151
G–53. Vegetable oils imported into the United States..... 152
G–54. Vegetable oils exported from the United States..... 152
G–55. Production of lard and lard substitutes and of butter and butter substitutes in recent years..... 152–153
G–56. The total actual and relative exports, imports, reexports, and net exports of all fish..... 153–154
G–57. Exports of fresh fish and canned salmon from the United States, in pounds. 155

CHAPTER VIII.

H–1. Annual and per capita production, relative per capita production, exports, imports, and reexports, the total, per capita, and relative per capita consumption of wheat, price of winter wheat on December 1, relative farm price per bushel, and relative purchasing power of wheat. 157
H–2. The production and carry over of wheat, the exports and imports of wheat and wheat flour, and the per capita consumption of wheat, 1897–1920. 158
H–3. Annual and per capita production, the exports, imports, reexports, and the total and per capita consumption of corn and price per bushel on December 1, by years, 1890–1920..... 160
H–4. The production and carry over of corn, the exports and imports of corn and corn meal, and the per capita consumption of corn..... 162
H–5. The total and per capita production of cotton, the total exports and imports, and per capita consumption, and the price of cotton on December 1, by years, 1890–1920..... 164
H–6. The number of milch cows on farms, total and per capita per thousand population, the relative number per thousand population, the farm price and relative farm price on January 1, and the relative purchasing power by years, 1890–1920..... 168
H–7. Dairy products of the farms in the United States..... 169
H–8. Dairy products of farms in the United States..... 170–171
H–9. The number of cattle other than milch cows..... 173
H–10. The number of live hogs on farms, the number exported and imported, the number available for slaughter, the relative number produced, and the relative number available for slaughter per 1,000 population, the relative farm price per head and the relative purchasing power... 176
H–11. The number of sheep on farms, the imports and exports of live sheep, the total available for consumption, the number available per 1,000 population, the farm price January 1, and the relative production, consumption, price, and purchasing power..... 177

CHAPTER IX.

I–1. Total farm expenditures for fertilizer..... 181
I–2. States spending most for fertilizer..... 182
I–3. Index numbers of industrial and agricultural wages..... 182
I–4. Farm expenditures for labor and feed in the United States..... 183–184
I–5. Number, acreage, and value of farms in United States..... 186–187
I–6. International Harvester Co. of America..... 189–191
I–7. International Harvester Co. of America..... 192
I–8. Wholesale prices of typical farm tools, Simmons Hardware Co., of St. Louis..... 192
I–9. Western Pine Manufacturers' Association..... 193
I–10. Statement of retail lumber prices for years 1913–1921..... 193
I–11. Number of farms and acreage of all land, improved land, woodland, and other unimproved land in farms..... 195–196
I–12. Number of farms in the United States..... 197
I–13. Number of farms in the United States..... 198

Digitized by Google

Page.

I-14. Motor vehicles, telephones, water, and light on farms in the United States 200
I-15. Motor vehicles, telephones, water, and light on farms in the United States 201-202
I-16. Production and acreage of specified farm crops 203

CHAPTER X.

J-1. The percentage of increase or decrease in the number of owned farms mortgaged, 1910–1920 205
J-2. Percentage of owned farms mortgaged 206
J-3. Average interest rate paid on farm mortgages in 1920 208
J-4. Receipts from the sale of live stock, live-stock products, crops, miscellaneous out of every $100 received from all sales, average of recent years 208
J-5. The percentage of farms operated by tenants, the percentage of owned farms mortgaged, and the interest rate on mortgages in States in which farmers receive $60 or more out of each $100 from the sale of farm crops 209
J-6. The percentage of farms operated by tenants, the percentage of owned farms mortgaged, and the interest rate on mortgages in States in which farmers receive from live stock $54 or more out of each $100 of farm sales 209
J-7. The percentage of farms operated by tenants, the percentage of owned farms mortgaged, and the interest rate on mortgages in the 10 leading live-stock States, 1920 210
J-8. The percentage of farms operated by tenants, the percentage of owned farms mortgaged, and the interest rate on mortgages in States in which farmers receive $30 or more out of each $100 211
J-9. Relative size of Federal farm loan obtained for different tenure groups .. 212

CHAPTER XI.

K-1. Farms in the United States 213
K-2. Proportion of farms in the United States operated by tenants, 1880–1920. 214
K-3. Farm acreage in the United States 214
K-4. Average acreage per farm and percentage of farm land improved 215
K-5. Value of farms in the United States 215
K-6. Value of all farm property in the United States 216
K-7. Per cent of farms operated by tenants 216
K-8. Decrease or increase in tenancy in each State 217
K-9. Number of farms in the United States 218
K-10. Per cent of all farms operated by tenants 220
K-11. The per cent of increase or decrease in the number of farms and in tenancy, 1910–1920 221
K-12. Per cent of tenancy in 1920 in the States leading in specified farm products 222

CHAPTER XIII.

L-1. Wholesale and retail price changes of white corn meal and relative increase in margins 226
L-2. Wholesale and retail price changes of Honduras head rice and relative per cent increase in margins 228
L-3. Wholesale and retail price changes of granulated sugar and relative per cent increase in margins 230
L-4. Wholesale and retail prices of sirloin steak at New York 232
L-5. Wholesale and retail prices of sirloin steak at Chicago 233
L-6. Wholesale and retail prices of round steak at New York 234
L-7. Wholesale and retail prices of round steak at Chicago 235
L-8. Wholesale and retail prices of lard at New York 236
L-9. Wholesale and retail prices of butter at New York 237
L-10. Wholesale and retail prices of butter at Chicago 238
L-11. Wholesale and retail prices of bacon at Chicago 239
L-12. Wholesale and retail prices of ham at Chicago 240

Digitized by Google

LIST OF CHARTS.

CHAPTER I.

Page.

A-1. The purchasing power of the farmer's dollar 27
A-2. The purchasing power of live stock and of farm crops from January, 1913, to April, 1921 32

CHAPTER II.

B-1. Relative wholesale prices, by years 34
B-2. Relative wholesale prices, by months 35
B-3. Relative increase and decrease of commodities 36
B-4. Relative increase and decrease of commodities 38
B-5. Relative increase and decrease in prices of farm crops, live stock, and other commodities 39
B-6. Relative wholesale prices for farm products and other commodities for May, 1921 40
B-7. Relative wholesale prices of all farm products and all commodities for May, 1921 41

CHAPTER V.

E-1. Relative wholesale commodity prices in Italy, France, England, and United States, 1915–1921 59
E-2. Wholesale commodity prices in the United States and England, 1790 to 1920 60
E-3. The relative wholesale prices, by months 72
E-4. Relative wholesale prices, by years 73
E-5. The relative prices of different groups of commodities in the cost of living on the basis of July, 1914 74
E-6. The relative wholesale prices of all commodities and the relative wholesale prices of the main commodities entering into the cost of living 75
E-7. Percentage of firms failing to the number in business in terms of the annual rate, seasonal variation allowed for 77

CHAPTER VII.

G-1. The production, export, consumption, and wholesale price of wheat by years 94
G-2. The net export and wholesale price of wheat by months 95
G-3. The production, export, wholesale price and per capita consumption of beef and veal 122
G-4. The production, export, wholesale price and per capita consumption of beef and veal 123
G-5. The per capita production and consumption, the net export and the price of pork and lard 136
G-6. The production, export, consumption, and wholesale price of pork by years 138
G-7. The production, export, wholesale price, and per capita consumption of pork by months 141

CHAPTER VIII.

H-1. The relative per capita production and consumption of wheat and the relative purchasing power of winter wheat 159
H-2. The relative per capita production and the relative purchasing power of corn 163
H-3. The relative per capita production and consumption of cotton and the relative purchasing power at December 1 prices 166
H-4. The relative per capita production of wheat, corn, and cotton 167
H-5. The relative number of dairy cows on farms per 1,000 population and their relative purchasing power 172
H-6. The relative number of cattle other than dairy cows on farms per 1,000 population and their relative purchasing power 174
H-7. The relative per capita production of hogs, sheep, milch cows, and cattle other than milch cows per 1,000 population 178

CHAPTER X.

J-1. Index numbers of land values and crop values per acre, 1909–1920 207

Digitized by Google

THE AGRICULTURAL CRISIS AND ITS CAUSES.

INTRODUCTION.

The Joint Commission of Agricultural Inquiry was created by Senate Concurrent Resolution 4 and directed to investigate and report to Congress upon the following subjects:

1. The causes of the present condition of agriculture.
2. The cause of the difference between the prices of agricultural products paid to the producer and the ultimate cost to the consumer.
3. The comparative condition of industries other than agriculture.
4. The relation of prices of commodities other than agricultural products to such products.
5. The banking and financial resources and credits of the country, especially as affecting agricultural credits.
6. The marketing and transportation facilities of the country.

The resolution was passed by the Senate May 31, 1921, and by the House, June 7, 1921, and required the commission to report within 90 days after the passage of the resolution. The time was subsequently extended to the first Monday in January, 1922, by House Concurrent Resolution 26, passed by the House August 1, 1921, and by the Senate on August 4, 1921.

The Senate members of the commission were appointed on the 10th day of June, 1921, and the House members of the commission on the 15th day of June, 1921. Owing to unavoidable difficulties in securing the necessary working space for the commission and organizing its personnel, the commission did not get under way until July 1, 1921.

It was clear at the outset that the subjects of investigation as stated in the resolution covered such a broad field that the commission could not hope to report upon all of the possible lines of inquiry which the resolution suggested or made possible, and an effort was therefore made to reduce the lines of inquiry to the major subjects upon which it seemed possible for the commission to report within the time fixed. The inquiry was divided into four major subjects, as follows:

1. The condition of agriculture and the factors which caused it.
2. The adequacy and effectiveness of the credit machinery and resources of the country.
3. Transportation.
4. Marketing and distribution.

In the consideration of the entire problem which the resolution presented to the commission, it was impossible to wholly separate each of these subjects from every other, because of the necessary relation which obviously exists between them.

The primary purpose of this report is to deal finally with the first of the major subjects, viz, the condition of agriculture, and the factors that caused it. The report deals partially with the second

Digitized by Google

and third major subjects of transportation, and marketing and distribution, but a full report upon these subjects is reserved for a later date.

It was apparent from the beginning that the commission could not hope to make the original investigation necessary to a conclusive report upon the wide range of subjects suggested by the resolution, nor could it hope to secure this information through the usual congressional method of hearings. The time required and the difficulty of coordinating information obtained by either of these methods precluded a reliance upon either one of them alone. Hearings, however, were held beginning July 11, 1921, and a great deal of information secured in this way, but in the main the purpose of holding hearings was to establish the background for the statistical data upon which the conclusions of the commission primarily rest.

The method pursued by the commission in securing the data necessary for its conclusions was to set up contacts with the various Government and private agencies through which the information could be obtained, in such form as the commission desired for its purposes; that is to say, the commission so far as possible made use of the personnel and the information of various departments of the Government, the various private agencies and associations, and individuals. The commission wishes to acknowledge with appreciation the cooperation and assistance of the Department of Agriculture, the Department of Commerce, the Interstate Commerce Commission, the Federal Trade Commission, the United States Chamber of Commerce, the American Farm Bureau Federation, the National Board of Farm Organizations, the Federal Reserve Board, and the various Federal reserve banks, as well as the assistance and cooperation of numerous private corporations and individuals.

The report relates to the immediate period ending June 30, 1921, except where otherwise indicated.

SUMMARY.

The commission recommends:

(1) That the Federal Government affirmatively legalize the cooperative combination of farmers for the purpose of marketing, grading, sorting, processing, or distributing their products.

(2) That the farmer's requirements for credit corresponding to his turnover and having maturity of from six months to three years, which will enable payment to be made from the proceeds of the farm, be met by an adaptation of the present banking system of the country, which will enable it to furnish credit of this character. It is expected that a concrete proposal to carry out this recommendation will be made in part 2 of this report.

(3) That there should be a warehousing system which will provide a uniform liability on the part of the warehousemen and in which the moral and financial hazards are fully insured. To this end the commission suggests the extension of the existing Federal warehouse law and the passage by the several States of uniform laws regulating the liability of warehousemen and the services rendered by them.

(4) The commission believes that an immediate reduction of freight rates on farm products is absolutely necessary to a renewal of normal agricultural operations and prosperity and recommends

Digitized by Google

prompt action by the railroads and constituted public authority to that end.[1]

(5) That there should be an extension of the statistical divisions of the Department of Agriculture, particularly along the lines of procurement of live-stock statistics.

(6) That provision should be made by Congress for agricultural attachés in the principal foreign countries producing and consuming agricultural products.

(7) The development by trade associations and by State and Federal sanction of more accurate, uniform and practical grades of agricultural products and standards of containers for the same.

(8) That adequate Federal appropriations should be made for the promotion of better book and record keeping of the cost of production of farm products on the basis of the farm plant unit, as a basis for the development of more efficient methods of farm management.

(9) Provision for an extended and coordinated program of a practical and scientific investigation through State and National departments of agriculture and through agricultural colleges and universities directed toward reducing the hazards of climate and weather conditions and of plant and animal diseases and insect pests.

(10) More adequate wholesale terminal facilities, particularly for handling perishables at primary markets and a more thorough organization of the agencies and facilities of distribution of the large consuming centers of the country.

(11) The development of better roads to local markets, joint facilities at terminals connecting rail, water, and motor transport systems and more adequate facilities at shipping points with a view to reducing the cost of marketing and distribution.

(12) That greater effort be directed to the improvement of community life.

(13) The renewal of conditions of confidence, and industrial, as well as agricultural prosperity is dependent upon a readjustment of prices for commodities to the end that prices received for commodities will represent a fair division of the economic rewards of industry, risk, management, and investment of capital. These conditions can not be brought about by legislative formulas but must be the result for the most part of the interplay of economic forces. The Government and the States within their respective spheres should do by legislative and administrative action what it may be possible to do, based upon sound principles to facilitate this readjustment.

In making the foregoing recommendations it must be understood that the jurisdiction of the Federal Government is limited and that it can not directly regulate production, marketing, or, transportation, not the subject of interstate commerce. Therefore the foregoing recommendations contemplate, in addition to legislation within the jurisdiction of Congress, action by State authorities within their respective jurisdictions and local and private interests, in order to achieve the objects sought.

Business cycles of alternating great prosperity and succeeding great depression, such as that from which we are now emerging, have occurred in a more or less regular way among all modern highly organized nations. These cycles vary greatly in phenomena, inten-

[1] Since this recommendation was agreed to, certain reductions in freight rates upon agricultural products have been made.

Digitized by Google

sity, and duration, and among the countries and localities affected by them, but are substantially similar in their principal characteristics.

Various theories have been advanced as to the causes of these cycles, but the consensus of opinion, we think, supports the view that the primary cause of the arrest of optimism, expansion, speculation, and prosperity, and the beginnings of the phenomena of depression, is the exhaustion of credit and money capital, which is followed by the loss of either foreign or domestic markets or both.

The cycle runs from the end of a period of depression, when confidence begins slowly to return, when surplus stocks of goods have been worked off and shelf stocks are generally reduced; when the lowered demand accompanying unemployment begins to overtake supply, when money is easy, interest rates are down, and prices, especially for raw materials, are low. At this period business begins to revive; more and more people are employed, and more and more goods are consumed. Business expands at an increasing tempo, unemployment disappears, and wages increase. As prices rise, a fever of speculation sets in, and there develops a veritable scramble for goods, stocks, and properties. Paper profits are large. People spend freely, extravagantly, and finally beyond their current income. Orders for present and future deliveries pile up and an apparent shortage of goods develops a seller's market. Industrial plants are extended to meet this supposed demand, interest rates rise, and bank loans and currency issues expand to meet the expansion of business. All the economic and psychological factors conspire to produce an era of intense business activity and prosperity.

In these periods of great activity and prosperity, a heavy volume of debts is made for plant extensions, for production, and consumption. These debts accumulate faster than production and savings. Greater and greater difficulty is encountered in meeting debts and interest currently due with current production and savings. As interest and debts currently due overtake and pass current production and savings, a curious reversal of direction occurs in the economic and psychological forces and phenomena which combine to produce prosperity. Bankers, whose expanding loans have depleted their reserves, are forced to stop further lending and then to call loans; banks of issue raise discount rates; speculation rapidly diminishes; manufacturers and merchants begin to place surplus stocks on the markets; prices begin to fall; consumers curtail purchases and spending in anticipation of still lower prices; orders for goods are canceled, and it becomes apparent that the orders representing demand were more or less of fictitious proportions; more and more goods are put on the market, while demand grows less and less; building slows down; debts are liquidated as far as possible from current receipts; the buyers' strike develops; production falls off in consequence of lowered demand; and unemployment develops; prices continue to fall, and the decline is usually more rapid than the rise.

This process is continued until some portion of the debts made in the period of prosperity is liquidated and until stocks are reduced to a point where such demand as exists, even in times of unemployment, finally overtakes supply. Prices and interest rates are down, wages are lower, money is easy, and the beginning of the new era of prosperity is at hand; all of which we have seen in this country and in many others in a highly condensed and most spectacular form in the last two and

Digitized by Google

a half years. Rarely has a cycle swept through all its familiar features more swiftly and dramatically than that which followed the close of the Great War. The most distant nations were equally involved, and most of them followed through the successive phases in almost identical times. Far-distant Java and Japan were affected in much the same way, at much the same times, as the United States, Canada, and Great Britain.

In the United States every industry and every class of people were involved in the avalanche of descending prices. The turn in the tide from optimism, expansion, speculation, and extravagance to the reaction of deflation and depression occurred about the middle of 1920 and at about the time when the grain crop of the United States was beginning to go on the market. The prices of live stock and live-stock products had already begun to decline, and these facts together, coupled with a failing export demand, were undoubtedly responsible for earlier and more rapid decline in the prices of agricultural products compared with the prices of other groups of commodities.

It is to the determination of the present condition of agriculture as a result of the influences, psychological and economic, which brought about the crisis of 1920 and 1921 and the causes of these conditions that this part of the report is devoted.

In arriving at an understanding of the condition of the farmer resulting from the debacle of prices in 1920 and 1921 and in the economic periods which preceded it, the commission has undertaken to measure the well-being of the farmer by four standards. These standards were:

1. The purchasing power of the farmer's dollar.
2. The absolute prices of farm products as compared with the absolute prices of other groups of commodities.
3. The quantity production of agriculture as compared with the quantity production of other industries.
4. The income or reward for capital invested and labor employed in the agricultural industry as compared with the income or reward for capital invested or labor employed in other industries.

THE FARMER'S DOLLAR.

Measured in terms of purchasing power, the farmer's dollar in 1920 was worth 89 cents. In May, 1921, it was worth 77 cents. During the past 12 months it has been worth less than in any preceding 12 months in 30 years.

The prices of farm products during the war period were higher than the prices of some groups of commodities and lower than others. On the whole, they about kept pace with the prices of all commodities combined. In the recent perpendicular decline, the prices of farm products declined more rapidly and went to a lower level than the prices of other commodities. This fact increased the disadvantage of the farmer during the period of deflation by increasing the margin between the prices of what he had to sell and the prices of the commodities he had to buy. Inflation has the effect of taking money from some groups and giving it to others. Deflation does the same, but deflation does not necessarily take money from those who profited by inflation. In the rise and fall of commodity prices during the cycle through which we have just passed the

Digitized by Google

farmers profited but little in a few years and lost heavily in recent months. The profits made by the farmer during the war were only slightly greater than those of 1913 and were swept away by the decline in prices of 1920 and 1921.

THE RELATIVE GROWTH OF AGRICULTURE AND OTHER INDUSTRIES IN QUANTITY PRODUCTION.

The quantity production of agriculture as an industry has not kept pace with quantity production in other industries. It has just about kept pace with population. From 1899 to 1909 the quantity output of agricultural products in the United States increased 10 per cent while the population increased 21.5 per cent. From 1909 to 1919 the quantity output of farms increased 10.5 per cent while population increased 14.5 per cent. This increase in farm output was largely due to an increase in acreage and to a slight degree only to an increase in output per acre. Quantity output of other industries, such as mining and manufacturing, increased more rapidly than did population and has also increased more rapidly than the quantity output of agriculture. Measured by quantity output the well-being of agriculture has lagged behind other industries.

WAGES AND INCOMES.

Agriculture has produced from 16 per cent to 23 per cent of the national income of the United States and normally about 17 per cent or 18 per cent, although approximately 30 per cent of the persons gainfully employed in the United States are engaged in agriculture. The average income received by a farmer for his labor, after deducting the return of 5 per cent on his property investment, is below the average earnings of employees in many other industries. The average reward per farmer for labor, risk, and management, after allowing 5 per cent return on the value of his investment, in 1909 was $311. In 1918 it was $1,278, and in 1920 it was $465. Measured in terms of purchasing power, the farmer's reward in 1909 was $326; in 1918, it was $826; and in 1920, $219. The average reward of employees in the mining industry in 1909 was $590; in 1918 it was $1,280. Measured in purchasing power, it was $618 in 1909 and $808 in 1918. The average yearly earnings of employees in railway transportation in 1909 was $773, and in 1918, $1,532. Measured in terms of purchasing power, the earnings of employees in rail transportation was $682 in 1909 and $882 in 1918. If a farmer in 1918 had been employed in the mining industry, he would have received a wage of $1,280, or about what he received for labor, risk, and management on the farm. Had he worked as an employee of a railway or of a bank and obtained the average wages of an employee in either industry, he would have received more for his labor than he received for risk, management, and labor in 1918 on the farm.

While the income and reward for capital invested and labor employed in agriculture have been improving in recent years, as compared with other industries, they are still relatively lower and in 1920 were far below the rewards of other industries.

Measured by the standard of purchasing power of his products, by the absolute prices of farm products as compared with the prices

Digitized by Google

of other commodities, by the test of quantity output or the test of income and rewards for capital invested and labor employed, agriculture in 1920 and thus far in 1921 is relatively worse off than other industries.

PRODUCTION IN 1920.

In summating the causes which brought about the debacle of prices in 1920 and 1921 it is necessary to marshal them in such a way that their relation to the crisis may be fully understood and their influences properly assessed. These factors are normally the factors which go to make prices of farm products which in their relation to the prices of other groups of commodities are in a sense a measure of the relative well-being of agriculture as compared with other industries. These factors are total production, including imports, per capita production, total consumption including exports and per capita consumption.

Was the decline of agricultural prices in the crop year 1920–21 induced by overproduction in 1920? The total production of grain in 1920 was greater than in any other year since 1915 but less than in 1915, 1912, or 1906. In none of these years did a production greater than that of 1920 produce anything like the same decline in prices. The production of wheat and corn in 1920 was somewhat larger than the average for 1909–1913, while the production of cotton was relatively less.

The number of beef, cattle, and sheep on farms in 1920 was less than on the average for the period of 1909–1913, while the number of hog farms was somewhat greater. The slaughter of cattle and sheep in 1920 was markedly below the average slaughter in the years 1909–1913, while the slaughter of hogs was slightly greater than the years 1909–1913 and the slaughter of calves markedly so. On the whole, however, it can not be said that overproduction or overmarketing of farm products in 1920 was in any considerable measure a moving factor in the decline of prices 1920–21.

EXPORTS AND IMPORTS OF FARM PRODUCTS.

If the decline in prices of agricultural products can not be attributed to overproduction, can it be attributed to a decline of consumption as reflected in a falling off of exports of farm products?

In assessing the importance of exports as a factor in determining the price of the domestic product, it must be remembered that agricultural products for the most part are produced in surplus quantities and that a relatively inconsiderable increase or decrease in exports has more than a correspondingly great influence upon the prices. The great economist, Gregory King, has estimated that a deficiency of one-tenth will increase the price three-tenths and that a deficiency of two-tenths will increase the price eight-tenths. The same law applies to surpluses. Excess production, therefore, unless absorbed by exports, tends to depress the price in much the same ratio. With the exhaustion of the credits extended by the United States Government to European Governments during the war, of which there was a balance of $2,500,000,000 at the close of the war, the purchasing power of European peoples began to decline. This failing purchasing power was immediately felt in a decline of exports

Digitized by Google

from this country. Production of wheat in 1920, as has been seen, was slightly above the average. Exports of wheat and wheat flour in the fiscal year 1920–21 was greatly in excess of the average and larger than either of the fiscal years 1918–19 or 1919–20, and the decline of the price of wheat was relatively less than the decline in the price of any other grain except rye, production of which in 1920 was largely above the average as were exports. Production of corn in 1920 was also above the average, while exports of corn and corn meal for the fiscal year 1920–21 were also above the average. The price of corn for the crop of the year 1920, however, declined more than the price of either wheat or rye. The production of oats in 1920 was likewise above the average. While exports of oats were above the average 1909–1913 they were far below the average of the preceding five years.

On the whole exports of all grains in the fiscal year 1920–21 were greatly in excess of the 1909–1913 average and about equal to the average of the preceding five years. Excepting wheat and rye, exports of other farm grains are normally not a large factor in determining prices; exports of grain other than wheat and rye are normally almost an insignificant part of the total production. Exports of cotton were markedly less in 1920 than the average. The decline in exports of cotton began in March, 1919, and was promptly reflected in a decline in prices. Approximately two-thirds of the cotton crop is exported, although exports of cotton in recent years have shown a marked tendency to decrease. Consumption of cotton in 1920 was lower than in any year since 1915, and this failure of consumption, coupled with the lack of export demand, was undoubtedly a major factor in producing the tremendous decline in the prices which occurred in this commodity.

Exports of beef and veal declined rapidly during 1920 and 1921. This decline in exports was coincident with the decline in prices and doubtless was a major factor in inducing it. The failure of export demand was accompanied by a sharp decline in prices. Consumption of beef in this country bears a very close relation to urban employment or unemployment, and with the progress of the period of business depression and consequent unemployment, consumption of beef and beef products diminished.

The exports of pork began to fall off as early as May, 1919, and declined rapidly thereafter. Domestic consumption of pork, which is essentially a poor man's food, was relatively maintained during 1920. The first influence, therefore, which induced the decline in prices of pork and pork products must be assigned to the diminishing export demand. The decline in the prices of dairy products was preceded by both a failure of exports and an increase of imports. On the whole, it may be said that the first downward impulse was given prices of live stock, live-stock products and cotton by diminishing export demand, and that while large exports of wheat and rye served to maintain the level of prices of these commodities above those of other agricultural products they did not serve to wholly prevent decline of prices of these commodities. Consumption of wheat, beef, mutton and dairy products have all declined during the period of depression and this decline in consumption undoubtedly contributed to and accelerated the decline in the prices of these commodities.

Digitized by Google

THE BREAK IN PRICES.

The crisis was not confined to this country. The avalanche of declining prices and its attending hardships, sacrifices, and losses involved the whole world. It began in distant Japan with the break in the silk market and the Chinese boycott of Japanese goods. It traveled the circle of the Far East, Australia, India, Java, England, France, Italy, the whole of Europe, South America, Canada, and the United States. It embraced all countries and all industries, though not to the same extent or in the same way.

PRODUCTION AND CONSUMPTION OF FARM PRODUCTS.

In the United States the decline of prices began with live stock and ran the course of farm products. Prices of clothing, metals and metal products, lumber, shoes, steel, fuel, house-furnishing goods, copper, gasoline, and commodities of all descriptions followed in the train of the prices of agricultural products, but the prices of these commodities did not decline to the same degree or at the same time or with the same rapidity as the prices of agricultural products. Some of them declined only very slightly as compared with agricultural products. All of this served to diminish the purchasing power of farm products during the period and to intensify the farmers difficulties. As the failing purchasing power of the world began to make itself felt in the lessening of export demand for farm products, the prices of agricultural products began to decline. As prices of agricultural products declined, the purchasing power of the agricultural population, representing nearly 40 per cent of the total purchasing power of the country, began to diminish. As the purchasing power of the American farmer diminished, the production of industries that produced the commodities of commerce began to decline, and unemployment, resulting in diminishing consumption, gave further impulse to the avalanche of prices. Influential and important as these economic forces are in their effect upon prices of commodities, the psychology and attitude of 100,000,000 people, once directed either by optimism and the influences of expansion or by pessimism and the influences of depression, must not be overlooked.

PER CAPITA PRODUCTION AND CONSUMPTION OF FARM PRODUCTS.

A constructive and general program of permanent agricultural development can not be predicated upon the abnormal phenomena of a period of expansion or depression. It must proceed from a consideration of the course of agriculture over a long period of development in order that the wisdom of experience and a consideration of the organized knowledge of agriculture may be the guide and director of future development. It is therefore necessary to marshal the facts of production and consumption in such a way that the relation of the various factors which influence prices and therefore, in a degree at least, determine the welfare of agriculture may be thoroughly considered and the course of agricultural development properly appraised. A summation of these factors on the basis solely of total production would lead to wholly erroneous conclusions. The development of

Digitized by Google

agriculture must be measured in terms of increase of population—that is, in terms of production per inhabitant. The total production of wheat shows marked fluctuations from year to year, but on the whole has about kept pace with the increase in population.

The consumption of wheat, while varying widely and showing a great tendency to decline in periods of industrial depression and unemployment, has, nevertheless, on the whole, shown a tendency to increase. While there is at times an apparent relation between consumption as expressed by domestic consumption and exports and the price of wheat and wheat flour, the relationship is extremely irregular and apparently modified greatly by the method of selling wheat on the exchanges of the country, which introduces among the price-determining factors rumors of every sort, including the weather, crop failures, industrial and economic conditions of more or less temporary and indefinite character. The domestic consumption of wheat in 1920, as compared with 1919, dropped from 6.9 bushels to 4.6 bushels. This decline in consumption was no doubt due to failing purchasing power resulting from unemployment and the general depression which came upon the country during the last half of 1920.

Production of corn has about kept pace with population, and consumption has been about equal to production from year to year. The relation of prices to per capita production has been an irregular one, but on the whole a large per capita production of corn has resulted in a decreasing price and a small production in an increase of price. Corn can be carried over from year to year, and the carry over has had the effect of somewhat stabilizing the price of corn from year to year.

Production of cotton in the United States in recent years has shown a tendency to decline. Exports which constitute normally from one-half to two-thirds of the crop have likewise declined in recent years. There appears to be a close relation between production and consumption of cotton including export demand and prices. In general, large crops have resulted in declining prices and small crops in increased prices. It seems probable that statistics of crop conditions and of crop production, which for cotton are probably more accurate than for any other farm product, have had an influence in establishing a closer relation between the factors of production and consumption, and price in the case of cotton than in any other farm product.

The total number of milch cows on farms has increased in recent years, but the number of milch cows per 1,000 of population has decreased. The increase in total number has not been sufficient to maintain the per capita ratio of milch cows to population. The value of milch cows has increased steadily since 1890 and apparently without regular relation to the increase or decrease in the number of head per 1,000 of population, although on the whole the decline in the ratio of milch cattle to population has apparently tended to support a slight increase of milch cows in recent years. There has been a marked revolution in the dairy industry in recent years. The production of butter and cheese has markedly declined since 1899 while the production of milk and the number of gallons of milk sold has increased. In other words, the increasing quantity of milk required by increasing urban populations has been obtained at the cost of decreased production of butter and cheese.

Digitized by Google

The number of cattle other than milch cows on farms during the last decade was less than in the preceding decade. The number of cattle on farms per thousand of population has decreased in the last decade at a rapid rate. The price of cattle has borne a rather close relation to the increase or decrease of the number of cattle per thousand of population. Seven years of large production of cattle per capita were accompanied by seven years of low prices. Three years of low production beginning in 1897 resulted in three years of high prices. Eleven years of large production resulted in 11 years of low prices, while 10 years of low production brought 10 years of relatively high prices.

On the whole, consumption of meat in the United States is declining and it may be inferred that consumption of meat in this country is following the trend of consumption of meat in Europe—that is to say, that with declining herds and increasing cost of production the prices of meat seem likely to continue to increase, with resulting decreases in consumption. This decrease in consumption of meats is probably a factor in the increasing consumption of wheat and bread grains. In other words, we are gradually changing from a meat-eating nation to a bread-eating nation. Consumption of veal in this country has rapidly increased in recent years and if continued at the same or an increasing rate, is certain to result in a decrease in the supply of beef in the future.

The tendency toward increased slaughter of calves and consumption of veal is a real menace to the future production of beef in the country and presages an increase in the price of beef in the relatively immediate future.

The actual number of sheep on farms in the decade ending 1920 was lower than in the decade ending 1910. The average number of sheep per thousand of population in the last decade was below the average of either of the two preceding decades. The marked decline in the price of sheep which occurred in 1920 and 1921 seems likely to increase the rate at which flocks of sheep in this country are diminished. Unless some way can be found to introduce sheep and wool production in the scheme of husbandry of small farms, the diminishing acreage for pasture in the mountain States, coupled with the increases in the cost of production, seem likely to further diminish the total number of sheep on the farms.

On the whole, agricultural production in the United States has barely kept pace with consumption. Production of wheat and grains have about kept pace with increase in population, while production of cattle other than beef cattle and sheep has not kept pace with increase in population. The prices received for farm products have not been such as to induce an increase in farm production on the whole. While prices of agricultural products have borne a more or less irregular relation to the factors of supply and demand, these relationships are not as close as they should be or would be if more accurate agricultural statistics of production and supply could be made available.

COSTS OF PRODUCTION.

The costs of production for the 1920 crop were greater than the costs of any preceding crop in the history of the country. During 1919 and the first half of 1920 costs of production of agricultural

Digitized by Google

products rose more rapidly than prices of agricultural products and since June, 1920, costs of production have declined less rapidly than prices of agricultural products. Considerable data upon costs of production of farm products have been gathered by the United States Department of Agriculture and State departments of agriculture but this data is not sufficiently comprehensive nor accurate nor does it cover a sufficiently long period of time to constitute a safe basis for definite conclusions with respect to the profit or lack of profit in farming operations in recent years. In general, however, it can be safely assumed that the crop of 1920 was sold at less than the cost of production. Changes in farming methods as well as the lack of skilled help and the development of farm machinery have introduced a number of new elements into the cost of production and at the same time investment in land, buildings, and equipment has very materially increased. The quantity of fertilizers used in the production of farm crops, as well as the total expenditure for farm fertilizer has more than doubled in the last 10 years.

Wages of employees in agriculture, while relatively lower than in any other industries, have increased in later years. This is due to the necessity of meeting industrial competition and the more skilled character of the labor which must now be employed in farming operations.

FARM MORTGAGES.

In the last 10 years the total number of mortgages on farm lands and buildings owned by their operators has more than doubled and has increased proportionately more than the value of lands and buildings. The increase in the amount of farm mortgages is greatly in excess of the increase in quantity production of farm products and it would seem that the payment of the added interest and principal of the farm debt can only be paid out of increased prices. It is difficult to see how it can be paid out of prices such as have existed during the past 12 months. The decline in prices of agricultural products in the last 12 months has been equivalent to 53 per cent of the prices at the peak. This decline in the price of agricultural products has the effect of again doubling the farmers' debt, already doubled as compared with 1910.

TENANCY.

Tenancy in the United States has increased but slightly in the last decade, principally in the States west of the Mississippi River and south of the Mason and Dixon line. It is impossible to accurately predict the effect of the recent avalanche of descending prices upon tenancy in this country but it is probable that tenancy will increase rather than diminish.

TRANSPORTATION.

The pyramided advances in freight rates which have been made since 1913 have resulted in the highest level of freight rates during the period when agricultural products were at the lowest point they have been for 30 years in terms of purchasing power. These increases have had the effect of diminishing the net price received by the farmer, as the price of farm products is usually the price at the terminal or the price at the place where the product of one locality

Digitized by Google

or one country comes in direct competition with the product of another locality or another country, less the freight from the local market to that terminal.

Railroad service, like any other service or commodity, must be sold at a price within the reach of the people who pay for it. Freight rates, therefore, must bear some relation to the prices which it is possible to obtain for the commodities transported.

Numerous instances were brought to the attention of the commission in which it was shown that the total receipts from shipments, especially of fruits and vegetables, were absorbed by railroad charges in transporting them to market, leaving the producer nothing for his time, labor, and investment in producing them.

In other cases commodities could not be moved at all because the price at the terminal would be entirely absorbed by the freight charges in transporting them.

No industry can survive or prosper under such conditions.

An immediate reduction in freight rates from the farmer's standpoint both as a producer and consumer is absolutely essential to anything approximating a normal return of profits for farming operations. The commission believes that an immediate reduction of freight rates on farm products is absolutely necessary to a renewal of normal agricultural operations and prosperity, and recommends prompt action by the railroads and the constituted public authority controlling transportation rates, looking to a scientific readjustment downward of existing tariffs on agricultural products.[2]

WHOLESALE AND RETAIL PRICES.

During the period of price decline the wholesale prices of other commodities lagged behind the prices of farm products, and retail prices lagged far behind wholesale prices. Wholesale and retail prices of other commodities did not come down as fast as prices of farm products. This had the effect of widening the margin between the price which the farmer received for the products he had to sell and the prices which he paid for the products he had to buy. In general, retail margins have shown a tendency to decline as wholesale prices rose and to increase as wholesale prices declined. Retail margins in the first half of 1921 when farm products were at the lowest level were very much above retail margins in 1913.

The commission is now engaged in gathering data from which it expects to make an exhaustive analysis of the processes of distribution and the relation of prices of farm products, wholesale prices and retail prices. The conclusions and recommendations which it is expected will result from this investigation are reserved for another part of this report.

ACREAGE AND VALUE OF FARM LANDS.

At the close of the War between the States the unappropriated public domain consisted of 1,470,098,812 acres. In the 50 years since 1870 this acreage has been reduced by settlement 554,330,545 acres, and there remains of the public domain, including Alaska, unappropriated 542,511,252 acres.

[2] Since this recommendation was agreed to, certain reductions in freight rates upon agricultural products have been made.

Digitized by Google

There is no classification from which an estimate can be made of the proportion of these lands which is suitable for agricultural development, but it is safe to say, in general, that the remaining public lands are probably suitable for grazing and forestry except in those localities where land may be reclaimed by either irrigation or drainage.

From 1870 to 1920 the total value of land in farms and on farm buildings increased from $7,444,054,462 to $66,316,002,602. The value of land in farms in 1920 was $54,829,563,059 and the value of buildings on farms, $11,486,439,543. In the period from 1870 to 1920, the value per farm of land and buildings increased from $2,799 to $10,284. The total sum invested in farm equipment and machinery increased in the same period from $270,913,678 to $3,594,772,928. The total value of live stock on farms in the same period increased from $1,229,889,609 to $8,013,324,808. The rural population, that is, the population outside of incorporated places having 2,500 or over, decreased from 71.4 per cent to 48.6 per cent. The per acre production of grains has increased at the rate of about one-half of 1 per cent per acre per annum in the last 30 years.

NEED OF AGRICULTURAL PROGRAM.

It is clear that there is an imperative necessity for the formulation of a definite program looking to the permanent development of agriculture with a view of relating agriculture with the various agencies of distribution in such a way as to avoid duplication, waste, and loss in the common purpose to deliver the products of the farm to the consumer in the most economical and efficient way. The first essential of such a program is a conscious appreciation not only on the part of the farmer but also on the part of the country as well, that such a program is necessary. The second essential involves the proper organization of the knowledge of agriculture with particular reference to the marketing and distribution of agricultural products and the establishment of a sound, accurate, and current basis of agricultural statistics. This is suggested without reflection or criticism upon the statistical divisions of the Department of Agriculture. The agricultural statistics of this country are better than those of any other country in the world. They can and ought to be better than they are.

STATISTICS OF AGRICULTURE.

The statistics now available are neither sufficiently accurate, comprehensive, nor current, nor are they established upon a sufficiently definite and uniform basis to be completely comparable from year to year over a long period. There is not sufficient coordination of agricultural statistics with statistics of production and consumption, exports and imports procured by other departments. There should be an expansion of the statistical divisions of the Department of Agriculture, particularly along lines of procurement of live-stock statistics. Sound, accurate, current statistics are essential, not only to a conscious program of agricultural development but to the correlation of agriculture with the agencies of manufacture and distribution.

Agricultural statistics should include not only statistics of production and consumption, exports and imports from and to this country, but similar data with reference to crops in foreign countries. The

Digitized by Google

commission is of the opinion that the United States should be represented by agricultural attachés in the principal countries producing agricultural products and consuming them. Foreign agricultural statistics, both of production and consumption, are seldom available from foreign Government sources in time to be of value to the farmers or dealers in grain in this country. It is desirable that agencies should be set up in the principal centers of foreign production and consumption of farm products in order that those interested in the United States can be currently advised as to world crop production and consumption conditions.

STANDARDS OF AGRICULTURAL PRODUCTS AND CONTAINERS.

One of the elements which is now lacking in considerable measure at least in the procurement of agricultural statistics is a basis of standardization of agricultural products and containers. Standardization of agricultural products and containers is likewise essential to any adequate scheme of marketing and distributing farm products if unnecessary waste and losses in the process of marketing and distribution are to be avoided. The process of distribution will be greatly facilitated by sound and practical standards and grades applied to agricultural products in commerce. Standardization will likewise increase the opportunity of the consumer to secure the exact thing for which he bargains and to measure the quality of the product which he buys.

NEED OF ORGANIZATION AND COOPERATION IN PRODUCTIVE MARKETING AND DISTRIBUTION OF FARM PRODUCTS.

In recent years there has been a marked development of farm organizations upon cooperative lines for the purpose of selling, sorting, grading, marketing, and processing farm products. Losses to the farmer incident to his failure to properly sort, grade, and bulk his product are by no means inconsiderable. Individual farmers, however, can not economically purchase and operate the necessary machinery and maintain the necessary agencies for this purpose. It must be done cooperatively, if the farmer is to do it, or the farmer must turn this phase of the function of marketing over to some one else, in which case the profits incident to the better sorting, grading, and packing of the product go to the sorter, grader, or packer instead of to the farmer. The appropriate place and the proper functions of farmers' cooperative organizations will be fully discussed in connection with the report on distribution of farm products to be issued later, but the investigation of the commission has proceeded far enough to justify it in recommending legislation by Congress affirmatively recognizing the right of the farmer to combine with other farmers for the purpose of selling, sorting, grading, marketing, and processing his product.

AGRICULTURAL CREDIT.

The need of adapting the banking machinery of the country to the farmer's turnover and business requirements will be discussed in part 2 of this report and recommendations to accomplish this result will be therein made. It is sufficient to say here that the creation of

Digitized by Google

adequate banking machinery fully adapted to the farmer's requirements is an integral part of a comprehensive program of agricultural development.

WAREHOUSE SYSTEM.

The warehouse system of the United States is a decentralized and disintegrated system, subject to the widest variations of regulation of the warehouseman's liability in the different States. This situation does not lend itself to systematic marketing or orderly financing of farmers' crops. There should be a national warehouse system which would provide uniform liability on the part of the warehouseman and in which the moral and financial hazards are fully insured. To this end the commission recommends the extension of the existing Federal warehouse law and the passage by the several States of uniform laws regulating the liability of warehousemen and the services rendered by them. The farmer can not hope to adequately control the marketing of his product or to have influence in proportion to his number and importance in the absence of a warehouse system which will enable him to hold or sell his crops as his own judgment, or the judgment of the cooperative association of which he may be a member, dictates.

READJUSTMENT OF PRICES.

The orderly development of production, marketing, and distribution of farm products must be predicated upon the establishment of price levels representing a fair degree of equality of purchasing power between agricultural products and other commodities and economic rewards for investment and labor in agriculture equivalent to the property and labor returns in other industries.

It is perfectly obvious that agriculture can not prosper on the basis of a price level for its products substantially below the price level of other commodities. The exodus from the farm to the city has been attributed in the most part to the social advantages which the city is supposed to offer over the country. A careful investigation of the economic condition of the farmer leads to the conclusion that this exodus has been in a larger measure due to the greater economic rewards offered by urban employment than is offered for the risk, management, and labor on the farm and the greater income for capital invested in industry as compared with the income of capital invested in agriculture.

AGRICULTURAL SCIENCE AND EDUCATION.

Agriculture is subject to exceptional hazards resulting from the weather and climatic conditions, animal and plant diseases, and insect pests. These hazards reduce farming to a gigantic gamble. But methods of production can be adapted to the end of reducing losses from climatic and weather conditions to the minimum. Plant and animal diseases and insect pests can, to a certain degree, be controlled. But the means and the method of reducing or controlling these hazards can not be worked out on the farm by the individual farmer. The investment even of the largest is not sufficient to permit the maintenance of the organization necessary for the study

Digitized by Google

and formulation of these means and methods. A program of agricultural development therefore must include provisions for an expanded and coordinated program of practical scientific investigation through State and National departments of agriculture, and through agricultural colleges and universities directed toward reducing the hazards of climatic and weather conditions and of plant and animal diseases and insect pests. It should include the extension of instruction in the sciences and economics of agriculture in the public schools.

COST ACCOUNTING.

Considerable progress has been made in recent years in promoting better book and record keeping of the costs of production of farm products on individual farms. Better bookkeeping methods, including more adequate and complete cost records by farmers are essential to the development of more efficient farm management methods. The efforts of farmers in this direction should be promoted by State and Federal departments of agriculture and supported by adequate Federal appropriations.

WHOLESALE TERMINAL FACILITIES.

Wholesale terminal facilities in most of the cities of the United States are archaic and ill adapted to efficiently and economically distribute farm commodities, particularly perishables. Better wholesale terminal facilities of primary markets and a more thorough knowledge of organization of distribution agencies and facilities in large cities is essential to carrying out any constructive agricultural program.

GREATER SOCIAL AND COMMUNITY SATISFACTION.

Good roads to local markets, joint facilities at terminals connecting rail, water, and motor transport systems and more adequate facilities at shipping points will materially contribute to a reduction in the costs of marketing and distribution to the mutual benefit of producer and consumer.

While it is considered that greater economic rewards will constitute the greatest incentive to maintaining agricultural production and particularly keeping on the farm the people already there and their children, a program of agricultural development should be directed toward greater social and community satisfactions, and more convenient and improved social and community institutions.

Digitized by Google

Chapter I.

THE FARMER'S DOLLAR IN 1920–21.

An understanding of the condition of agriculture is clearly precedent to a study of the causes which were instrumental in bringing about that condition. In general, the condition of agriculture as a whole, as distinguished from the condition that characterizes the condition of individuals in agriculture, may be measured by the prices which the farmer receives for the products he has to sell, in their relation to the prices of other commodities. In other words, the condition of agriculture, in general, is good or bad in proportion to the purchasing power of the farmer's dollar. The farmer's condition is not an absolute condition, but a relative one, and that relation is determined by the amount which the products he raises will buy of other products. It is, therefore necessary, in order to ascertain the relative position of the farmer, to ascertain the purchasing power of farm products during the crisis through which we have just passed as related to the purchasing power of the farmer's dollar in other years.

In order to arrive at the purchasing power of a farmer's dollar in any given month or year, reference is had to an index showing the relative prices of groups of commodities at a given time. The price at the given time may be the average price for a year, or the average price for a period of years. Taking this average as representing 100, a series of figures is established which indicates the relative increase or decrease in the price compared with the established base. In establishing the index for a group of commodities, weights are given to the prices on the commodities making up the group in proportion to the production or relative importance of the commodities in the group.

The purchasing power—that is, the value of any given group of commodities or any given commodity in terms of any other commodity—is arrived at by dividing the price index for the given group of commodities, or the given commodity, by the price index of another group of commodities or of another given commodity.

To illustrate, if the index of farm products on the basis of 1913 in January, 1921, is 136, and the index of all commodities for the same month is 177, the purchasing power of farm products as compared with all commodities would be arrived at by dividing 136 by 177, the result of which is 0.76. By this method it is determined that in January, 1921, as compared with 1913 the farmer's dollar was worth 76 cents.

As foods and farm products are not purchased by farmers to the same extent as by other groups, the purchasing power of the farmer's dollar is sometimes determined by excluding from the "all-commodity" index foods and farm products. The purchasing power of the farmer's dollar by months from 1913 to date is shown in Table A–1, on page 27, and Table A–2, on page 28.

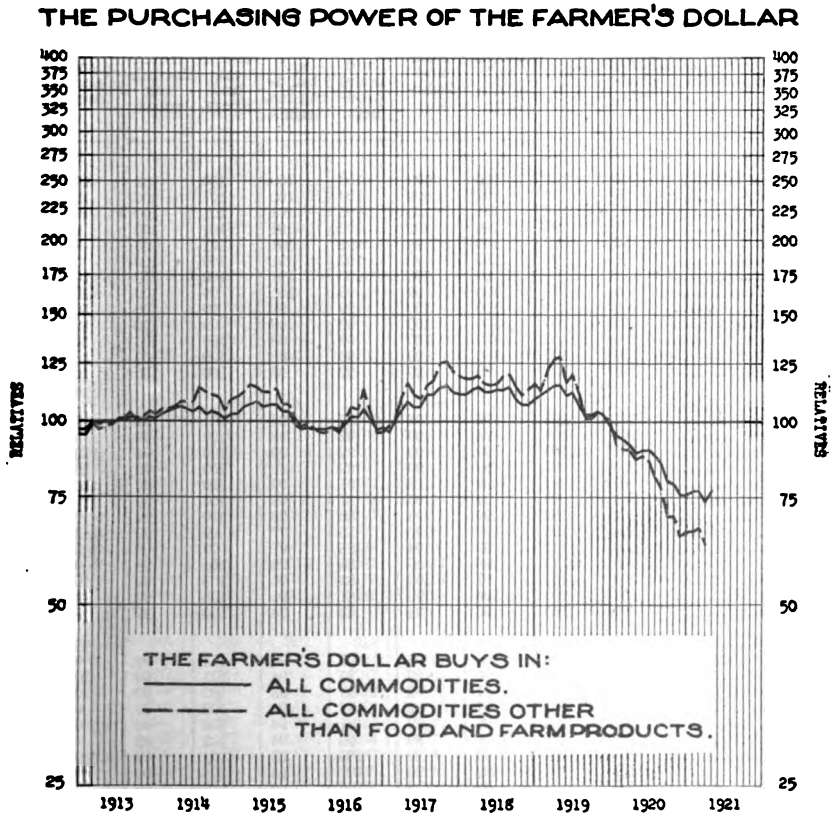
Digitized by Google

TABLE A-1.—*The purchasing power of all farm products, in terms of all commodities, excluding food and farm products.*

	1913	1914	1915	1916	1917	1918	1919	1920	1921
January	95	103	109	99	96	119	116	100	66
February	95	105	110	97	99	118	113	92	66
March	99	105	112	96	102	118	122	90	67
April	97	106	115	96	111	119	127	90	63
May	98	108	114	98	116	116	128	87	.....
June	99	108	112	96	111	115	117	88	.....
July	101	108	112	100	109	116	120	86	.....
August	101	114	113	106	115	119	112	81	.....
September	104	112	107	105	117	120	102	78	.....
October	100	111	107	113	125	114	102	70	.....
November	102	110	101	104	126	111	104	70	.....
December	104	105	98	96	121	113	103	65	.....
Average	100	107	109	100	113	117	113	84	.....

The purchasing power of farm products, including both crops and live stock, is shown graphically in the chart which follows:

CHART A-1.



Digitized by Google

TABLE A–2.—*The purchasing power of all farm products, in terms of all commodities, including food and farm products.*

	1913	1914	1915	1916	1917	1918	1919	1920	1921
January	97	101	103	98	98	111	109	99	76
February	97	103	103	97	96	111	111	95	77
March	100	104	106	97	101	113	113	94	77
April	99	105	107	97	105	114	115	92	74
May	100	106	108	98	108	112	115	89	77
June	99	105	106	97	106	112	111	90	.....
July	101	104	107	99	106	113	112	90	.....
August	100	106	107	102	111	113	107	88	.....
September	102	103	104	102	111	114	103	86	.....
October	102	104	104	105	114	109	103	80	.....
November	100	103	99	101	115	107	104	79	.....
December	102	101	97	97	112	107	103	76	.....
Average	100	103	103	98	107	112	110	89	.....

The basic indexes upon which the purchasing power is arrived at are given in Table A–3.

TABLE A–3.—*Index numbers of wholesale prices.*

BY GROUPS OF COMMODITIES AND BY MONTHS, 1913 TO 1920 (1913 EQUALS 100).

Year and month.	Farm products.	Food, etc.	Cloths and clothing.	Fuel and lighting.	Metals and metal products.	Lumber and building materials.	Chemicals and drugs.	House-furnishing goods.	Miscellaneous.	All commodities.
1913.										
Average for year	100	100	100	100	100	100	100	100	100	100
January	97	99	100	103	107	100	101	100	100	100
February	97	98	101	103	105	101	101	100	100	100
March	99	97	100	102	102	101	101	100	99	99
April	97	96	100	98	102	101	101	100	98	98
May	98	95	100	98	102	101	100	100	98	98
June	99	99	99	100	100	101	100	100	100	100
July	101	102	100	99	98	101	99	100	101	100
August	101	104	100	100	99	99	99	100	102	101
September	104	105	100	100	99	99	99	100	102	102
October	103	102	100	100	99	98	100	100	100	101
November	101	105	100	99	96	98	100	100	100	101
December	101	101	99	99	92	98	100	100	100	99
1914.										
Average for year	103	103	98	96	87	97	101	99	99	100
January	101	102	98	99	92	98	100	99	99	100
February	102	100	99	99	92	99	100	99	100	99
March	103	97	99	99	92	99	100	99	101	99
April	103	95	99	98	91	99	100	99	101	98
May	104	96	99	95	87	98	100	99	101	98
June	104	100	99	94	86	98	100	99	99	99
July	104	104	99	95	85	97	99	99	97	100
August	109	112	99	94	85	97	99	99	98	103
September	108	116	98	95	86	96	104	99	99	104
October	103	107	97	93	83	96	105	99	96	99
November	101	106	96	93	81	95	105	99	96	98
December	99	105	96	94	83	94	104	99	98	98
1915.										
Average for year	105	104	100	93	97	94	114	99	99	101
January	102	106	96	93	83	94	103	99	100	99
February	105	108	97	92	87	95	102	99	100	101
March	105	104	97	92	89	94	102	99	99	99
April	107	105	99	89	91	94	102	99	99	100
May	109	105	99	89	96	94	102	99	98	101
June	105	102	99	89	100	93	104	99	97	99
July	108	104	99	90	102	93	108	99	98	101
August	107	102	99	92	100	92	112	99	97	100
September	103	100	100	94	100	92	116	99	97	99
October	105	103	103	96	100	93	124	99	99	101
November	102	107	105	98	104	94	142	99	100	103
December	103	111	107	100	114	97	153	99	103	106

Digitized by Google

TABLE A-3.—*Index numbers of wholesale prices*—Continued.

BY GROUPS OF COMMODITIES AND BY MONTHS, 1913 TO 1920 (1913 EQUALS 100)—Contd.

Year and month.	Farm products.	Food, etc.	Cloths and clothing.	Fuel and lighting.	Metals and metal products.	Lumber and building materials.	Chemicals and drugs.	House-furnishing goods.	Miscellaneous.	All commodities.
1916.										
Average for year	122	126	128	119	148	101	159	115	120	124
January	108	113	110	105	126	99	150	105	107	110
February	109	114	113	106	132	100	170	106	106	112
March	111	115	117	108	141	101	175	106	109	114
April	114	117	119	108	147	101	172	108	110	117
May	116	119	122	107	151	102	166	112	113	118
June	116	119	124	108	149	101	166	112	119	119
July	118	121	126	108	145	99	156	121	120	119
August	126	128	128	110	145	100	146	122	122	123
September	131	133	131	115	148	100	147	122	125	128
October	136	140	138	133	151	101	150	124	132	134
November	146	150	146	155	160	104	155	123	135	144
December	142	145	155	170	185	106	159	124	137	146
1917.										
Average for year	189	176	181	175	208	124	198	144	155	176
January	148	150	161	176	183	106	159	132	138	151
February	151	159	162	185	190	108	160	132	141	156
March	163	160	164	188	199	110	165	132	143	161
April	181	182	169	184	208	114	170	139	149	172
May	197	190	178	194	217	117	179	139	150	182
June	197	187	179	201	239	127	180	144	152	185
July	199	181	187	192	257	132	198	152	153	186
August	205	180	193	165	249	133	209	152	156	185
September	204	178	193	160	226	134	223	152	155	183
October	208	183	193	146	182	134	252	152	163	181
November	212	184	198	155	174	134	240	155	166	183
December	205	185	202	158	174	135	238	155	170	182
1918.										
Average for year	220	189	239	163	181	151	221	196	193	196
January	207	187	211	157	174	136	232	161	178	185
February	208	186	216	157	176	138	232	161	181	186
March	212	177	223	158	176	144	232	165	184	187
April	217	178	232	157	177	146	229	172	191	190
May	214	177	237	160	178	148	223	173	194	190
June	217	179	245	159	178	150	219	198	196	193
July	224	184	249	166	184	154	216	199	190	198
August	230	191	252	166	185	157	222	221	191	202
September	237	199	255	167	184	159	220	226	194	207
October	224	201	257	167	187	158	218	226	196	204
November	221	206	256	171	188	164	215	226	203	206
December	222	210	250	171	184	164	195	227	204	206
1919.										
Average for year	234	210	261	173	161	192	179	236	217	212
January	222	207	234	170	172	161	191	218	212	203
February	218	196	223	169	168	163	185	218	208	197
March	228	203	216	168	162	165	183	218	217	201
April	235	211	217	167	152	162	178	217	216	203
May	240	214	228	167	152	164	179	217	213	207
June	231	204	258	170	154	175	174	233	212	207
July	246	216	282	171	158	186	171	245	221	218
August	243	227	304	175	165	208	172	259	225	226
September	226	211	306	181	160	227	173	262	217	220
October	230	211	313	181	161	231	174	264	220	223
November	240	219	325	179	164	236	176	299	220	230
December	244	234	335	181	169	253	179	303	220	238
1920.										
Average for year	218	236	302	238	186	308	210	337	236	243
January	246	253	350	184	177	268	189	324	227	248
February	237	244	356	187	189	300	197	329	227	249
March	239	246	356	192	192	325	205	329	230	253
April	246	270	353	213	195	341	212	331	238	265
May	244	287	347	235	193	341	215	339	246	272
June	243	279	335	246	190	337	218	362	247	269
July	236	268	317	252	191	333	217	362	243	262
August	222	235	299	268	193	328	216	363	240	250
September	210	223	278	284	192	318	222	371	239	242
October	182	204	257	282	184	313	216	371	229	225
November	165	195	234	258	170	274	207	369	220	207
December	144	172	220	236	157	266	188	346	205	189

Digitized by Google

TABLE A-3.—*Index numbers of wholesale prices*—Continued.

BY GROUPS OF COMMODITIES AND BY MONTHS, 1913 TO 1920 (1913 EQUALS 100)—Contd.

Year and month.	Farm products.	Food, etc.	Cloths and clothing.	Fuel and lighting.	Metals and metal products.	Lumber and building materials.	Chemicals and drugs.	House-furnishing goods.	Miscellaneous.	All commodities.
1921.										
Average for year:										
January	136	162	208	228	152	239	182	283	190	177
February	129	150	198	218	146	221	178	277	180	167
March	125	150	192	207	139	208	171	275	167	162
April	115	141	186	199	138	203	168	274	154	154
May	117	133	181	194	138	202	166	262	151	151
June	113	132	180	187	132	202	166	250	150	148
July	115	134	179	184	125	200	163	235	149	148

BY GROUPS OF COMMODITIES, 1890 TO 1920.

[1913=100.]

1890	68	89	94	69	114	72	90	72	92	81
1891	73	89	91	68	102	70	92	72	92	82
1892	66	80	91	66	93	67	91	71	88	76
1893	67	87	88	66	85	68	90	68	91	77
1894	59	77	78	61	72	66	83	67	86	69
1895	60	74	78	67	77	64	88	62	82	70
1896	54	67	75	69	80	63	91	58	80	66
1897	58	71	75	62	71	62	89	56	80	67
1898	61	76	79	61	71	65	93	61	79	69
1899	62	75	82	71	108	71	96	62	82	74
1900	69	79	88	80	106	76	97	69	91	80
1901	73	80	82	78	98	73	98	69	90	79
1902	81	85	84	92	97	77	97	73	92	85
1903	75	82	88	105	96	80	96	74	94	85
1904	80	87	89	91	88	80	97	73	94	86
1905	77	86	91	87	98	85	96	71	95	85
1906	78	84	97	90	113	94	94	74	97	88
1907	85	89	104	93	120	97	96	80	101	94
1908	85	94	94	91	94	92	100	78	97	91
1909	97	99	98	88	92	97	101	77	109	97
1910	103	100	99	84	93	101	102	80	116	99
1911	93	99	96	82	89	101	103	85	104	95
1912	101	108	98	89	99	100	101	91	101	101
1913	100	100	100	100	100	100	100	100	100	100
1914	103	103	98	96	87	97	101	99	99	100
1915	105	104	100	93	97	94	114	99	99	101
1916	122	126	128	119	148	101	159	115	120	124
1917	189	176	181	175	208	124	198	144	155	176
1918	220	189	239	163	181	151	221	196	193	196
1919	234	210	261	173	161	192	179	236	217	212
1920	218	236	302	238	186	308	210	366	236	243

Chart A-1 on page 27 shows that during the entire period beginning with January, 1920, the purchasing power of the farmer's dollar constantly declined until in April, 1921, it was 63 per cent of 1913 by one index and 77 per cent by the other.

Including food and farm products with all other products, the purchasing power of the farmer's dollar since 1890 is indicated by the following table (A-4):

Digitized by Google

TABLE A–4.

.....	83	1906.....	88
.....	89	1907.....	90
.....	87	1908.....	93
.....	87	1909.....	100
.....	85	1910.....	96
.....	85	1911.....	97
.....	81	1912.....	101
.....	86	1913.....	100
.....	88	1914.....	103
.....	83	1915.....	103
.....	86	1916.....	98
.....	92	1917.....	107
.....	95	1918.....	112
.....	88	1919.....	110
.....	93	1920.....	89
.....	90		

As indicated by this table, the farmer's condition in 1920, as measured by the purchasing power of his dollar, was worse than in any other year since 1901, with the exception of 1903 and 1906.

The following table, A–5, compares the purchasing power of 31 different farm commodities in April and May of this year on the basis of the 5-year average for the same product in the same month for successive years ending in 1914:

TABLE A–5.—*The price and the purchasing power of stated farm products, in April and May of 1921.*[1]

	Unit.	Date.	Price on specified date, 1921.	5-year average before the war for the same month.	Price index, 5-year average before the war (1909–1914) =100.	Present purchasing power on basis of 5-year average before the war=100.
.....	Bushel.....	May 1	$0.595	$0.647	92	59
.....	....do.....	...do....	.368	.412	89	57
.....	....do.....	...do....	1.107	.898	123	78
.....	....do.....	...do....	.492	.649	76	48
.....	....do.....	...do....	1.053	.721	146	93
wheat.....	....do.....	...do....	1.159	.731	159	101
ed.....	....do.....	...do....	1.257	1.763	71	45
.....	....do.....	Apr. 15	2.69	2.19	123	78
n corn.....	Ton.....	...do....	69.00	105.00	66	42
.....	Pound.....	May 1	.094	.126	75	48
seed.....	Ton.....	Apr. 15	17.23	22.70	76	48
.....	....do.....	May 1	13.08	12.23	107	68
hy seed.....	Bushel.....	Apr. 15	2.84	4.12	69	44
seed.....	....do.....	...do....	10.80	9.73	111	71
ge.....	Hundredweight....	...do....	2.03	2.04	100	64
s.....	Bushel.....	...do....	.98	1.27	77	49
oes.....	....do.....	May 1	.68	.696	98	62
potatoes.....	....do.....	...do....	1.272	.978	130	83
ts.....	Pound.....	Apr. 15	.035	.05	70	45
s.....	Bushel.....	May 1	1.422	1.226	116	74
ens.....	Pound.....	...do....	.217	.118	184	117
.....	Dozen.....	...do....	.202	.167	121	77
.....	Pound.....	...do....	.386	.247	156	99
cows.....	Head.....	Apr. 15	64.35	49.42	130	83
cattle.....	Hundredweight....	...do....	6.08	5.50	111	71
calves.....	....do.....	...do....	7.73	6.76	114	73
.....	....do.....	...do....	5.11	5.07	101	64
s.....	....do.....	...do....	7.55	6.46	117	75
.....	Pound.....	...do....	.179	.18	99	63
.....	Hundredweight....	...do....	7.96	7.59	105	67
s.....	Head.....	...do....	100.00	146.00	68	43
ge, 31 products.....					[2] 106	67
d States Bureau Labor, wholesale prices "*All commodities*," April [1].....				100	157	.....

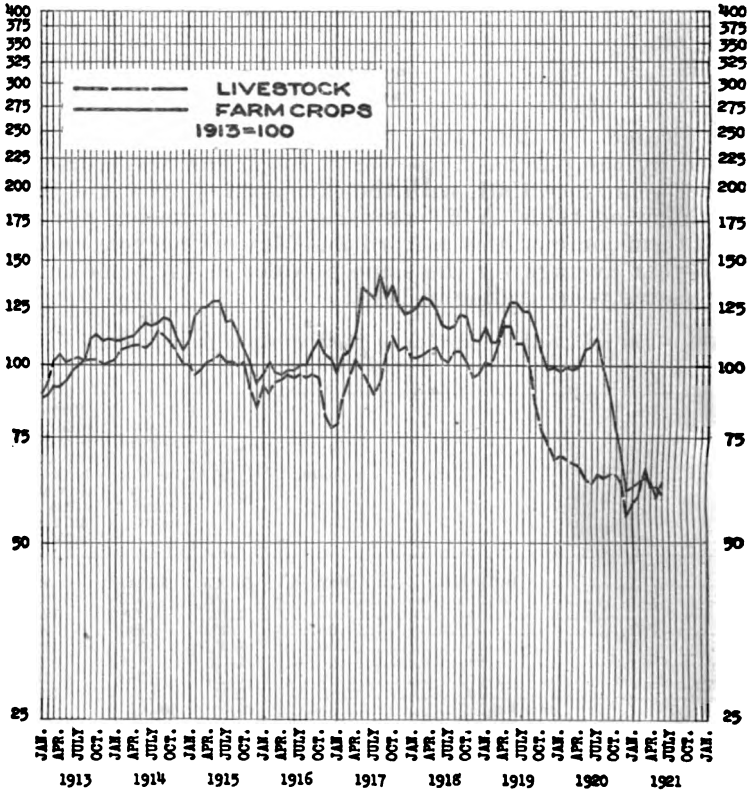
[1] Prepared by Prof. G. F. Warren, of Cornell University.
[2] The weighted average according to amounts usually sold is practically the same (index 110).

Digitized by Google

The following chart, A–2, shows graphically the purchasing p
of live stock as compared with the purchasing power of farm c
The chart shows that during the entire period from 1913 to
the returns from crops as measured in terms of the purchasing p
were relatively greater than those from live stock.

CHART A–2.

THE PURCHASING POWER OF LIVESTOCK AND OF FARM CR
FROM JANUARY 1913 TO APRIL 1921 BY MONTHS



The following tables, A–6 and A–7, on page 33, show the pur
ing power of farm products in terms of all commodities other
food and farm products, and in terms of all commodities incl
food and farm products, respectively, for the first six months o
crop year compared with the last six months of the crop yea
with the average for the crop year. In the eight crop years s
the purchasing power of farm crops was greater in the last six m
than in the first six months in three out of the eight years, gr
in the first six months than in the last six months in four out
eight years, and in one year the purchasing power was the sa
both the first and last six months of the crop year.

A careful interpretation of these tables also indicates that
the purchasing power of farm products was relatively hig

Digitized by Google

five of the eight years and relatively low in three, that the decline in purchasing power was relatively greater in the three years than the increase in the five years and that the relative increases in purchasing power are largely offset by the declines. Notwithstanding the high absolute prices for farm products during the war period, the relative gain of the farmer as expressed in purchasing power was small and has been fully wiped out by the declines which have subsequently taken place.

TABLE A-6.

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21
July 1 to Dec. 31.....	102	110	106	104	119	115	107	75
Jan. 1 to June 30.....	106	112	97	106	117	120	91	[1] 65
Average for crop year.....	104	111	101	105	118	118	99	71

[1] For four months.

TABLE A-7.

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21
July 1 to Dec. 31.....	101	104	103	101	112	111	105	83
Jan. 1 to June 30.....	104	106	97	102	112	112	93	[1] 76
Average for crop year.....	103	105	100	102	112	111	99	80

[1] For five month .

70678—H. Rept. 408, pt 1, 67-1——3

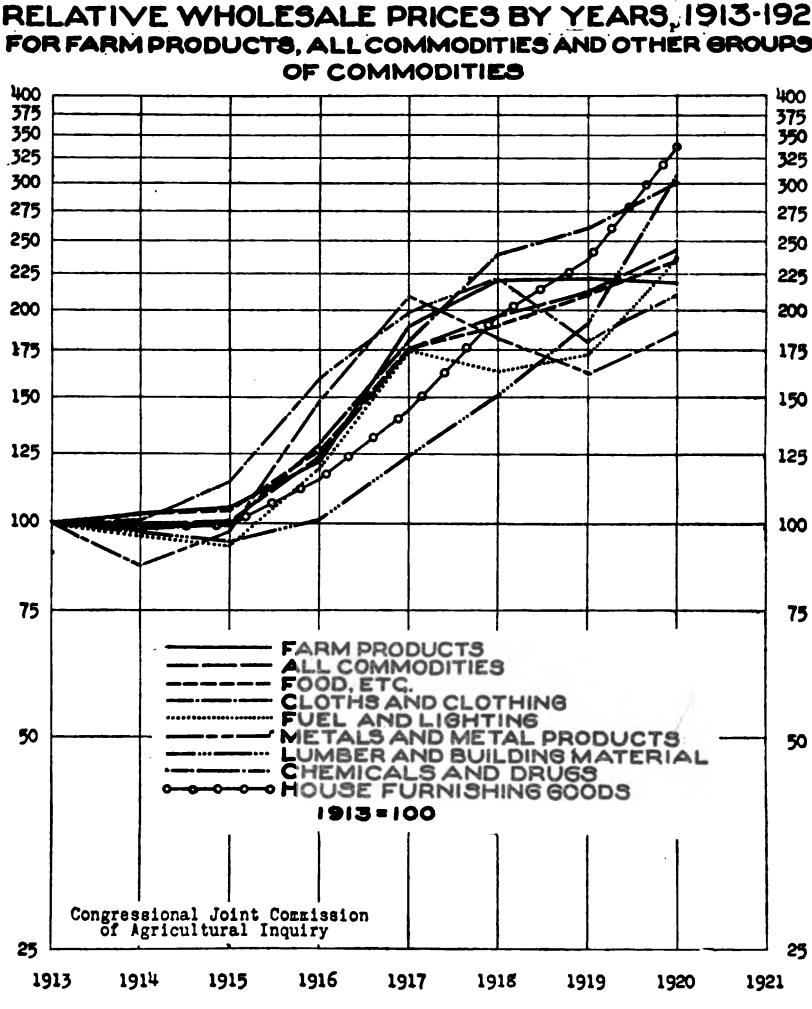
Digitized by Google

Chapter II.

THE RELATION OF PRICES OF AGRICULTURAL COMMODITIES TO PRICES OF OTHER COMMODITIES.

If the price of all commodities rose in exactly the same proportion, the relative welfare of the producers of the different commodities would remain the same, notwithstanding the increase in the general price level, and the purchasing power of one group of commodities

CHART B-1.



would remain constant in its relation to all other commodities, but the prices of commodities do not rise or fall in exactly the same proportion, nor do they rise and fall at exactly the same time. The

Digitized by Google

welfare of one group of producers as compared with another is, therefore, increased or diminished somewhat in the relation to the disproportionate rate and degree of increase or decline in the price of commodities which it produces as compared with the price of other commodities.

CHART B-2.

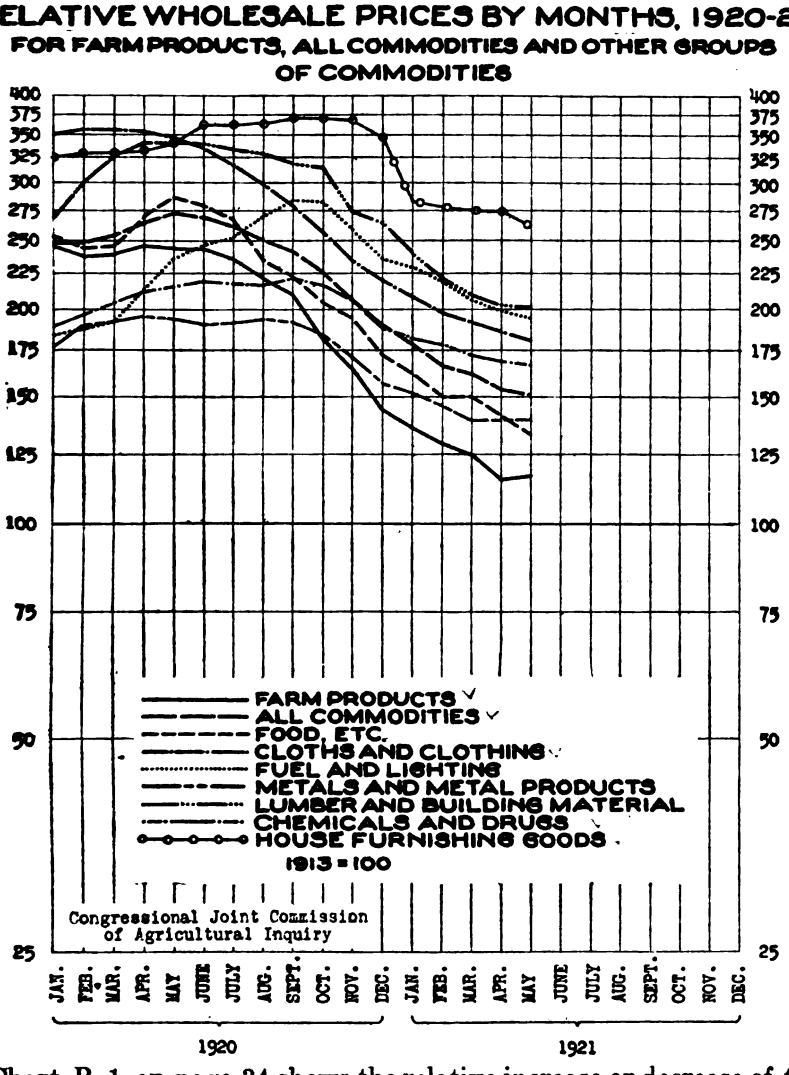


Chart B-1 on page 34 shows the relative increase or decrease of the price of different groups of commodities in their relation to each other during the period 1913 to 1920, inclusive, on the base of the index figures shown in Table A-3 on page 28. This chart covers the period of inflation of prices.

Chart B-2 shows the relation of prices of different groups of commodities by months on the same base from January, 1920, to June, 1921. This is the period of deflation of prices.

Digitized by Google

In general, the prices of farm products rose proportionately to the prices of other commodities until January 1918, and remained relatively on the level reached at that time, while the prices of other groups of commodities either fell slightly during the early part of 1919 and then rose again or continued to rise without material decline. By January, 1920, the prices of all groups were above those for agricultural products, except chemicals and drugs, fuel and lighting, and metals and metal products. By October, 1920, farm products were below all other groups, and by May, 1921, were markedly so.

Charts B–3 on page 37 and B–4 on page 38 show the relative increase and decrease of certain of the groups of commodities included in Charts B–1 and B–2 in another way.

Chart B–5 on page 39 shows the relative increase and decrease in prices of farm crops, live stock, and all other commodities from 1919 to May, 1921. This chart confirms the conclusion indicated by a comparison of the purchasing power of crops and live stock—that, in general, during this period the producers of crops were relatively better off, so far as well-being can be indicated by prices, than the producers of live stock.

The relatives upon which the graph for crops and live stock shown in Chart B–5 are based as shown in Tables B–1 and B–2, which follow:

TABLE B–1.—*Relative wholesale prices of live stock, by months, 1910–1921 (monthly average, 1913=100).*[1,2]

	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910
Jan. 15	120	173	192	179	121	92	94	100	91	77	91	95
Feb. 15	117	177	192	180	134	100	92	103	95	78	88	95
Mar. 15	123	178	200	186	152	107	92	105	101	81	87	105
Apr. 15	112	181	214	193	166	112	94	105	104	90	82	110
May 15	109	177	218	197	168	114	97	104	101	91	79	105
June 15	.....	175	213	194	167	114	98	103	102	89	78	104
July 15	.....	176	222	195	163	114	97	105	103	89	79	99
Aug. 15	.....	172	221	202	168	114	96	109	102	93	84	95
Sept. 15	.....	174	191	206	182	119	96	108	102	96	84	98
Oct. 15	.....	166	174	196	186	114	99	102	102	98	79	97
Nov. 15	.....	147	169	190	177	115	92	97	99	92	77	92
Dec. 15	.....	121	164	191	181	116	89	94	98	91	76	88

[1] Monthly Crop Reporter, June, 1921.
[2] Wholesale prices are computed average prices at terminal markets.

TABLE B–2.—*The relative wholesale prices of 10 leading farm crops, by months, 1910–1921 (monthly average, 1913=100).*[1]

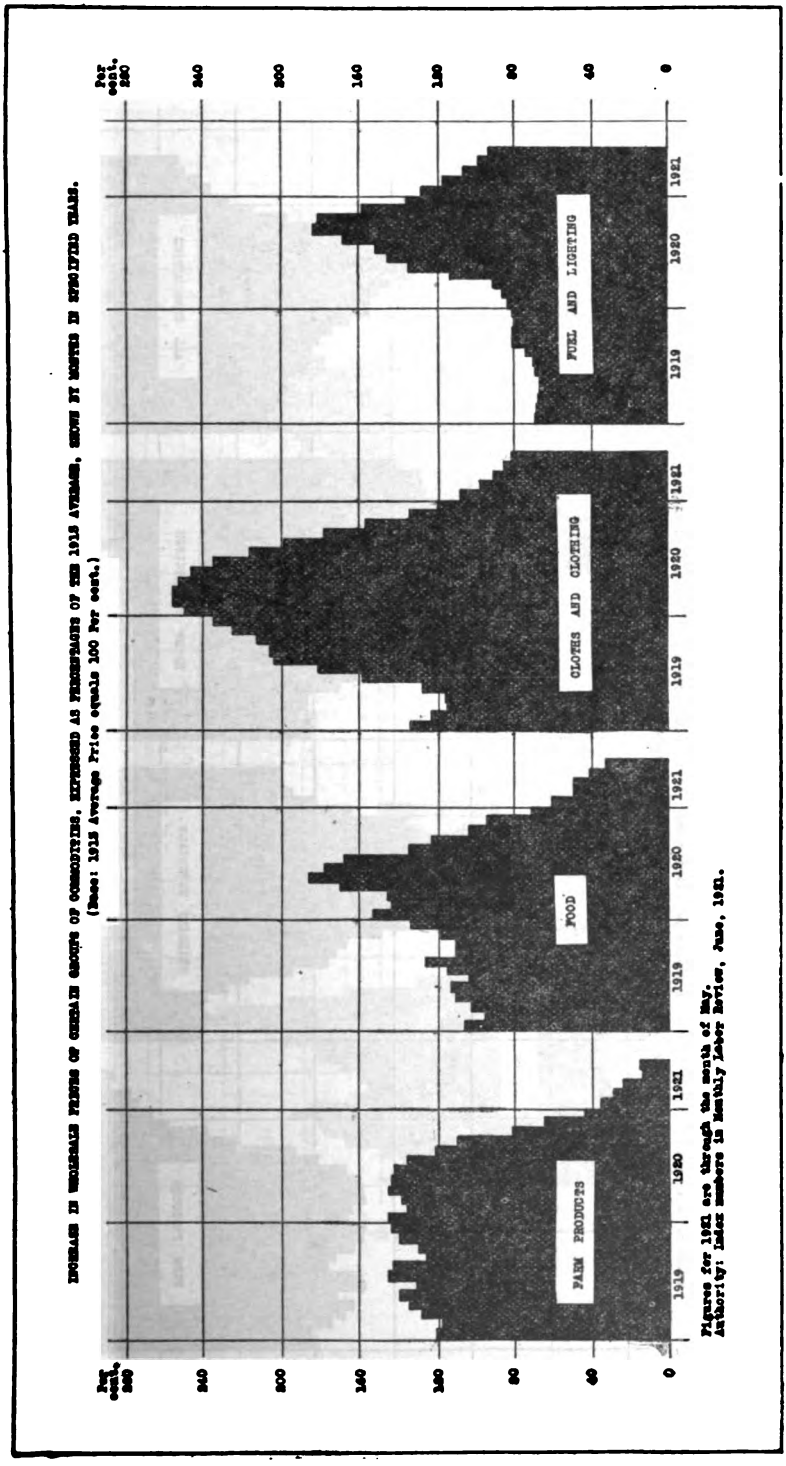
	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910
Jan. 1	129	241	221	214	149	105	103	108	90	109	96	109
Feb. 1	123	252	211	220	159	114	114	107	91	114	97	112
Mar. 1	120	255	209	234	168	112	117	109	92	118	96	114
Apr. 1	113	271	220	234	183	114	117	109	92	124	96	113
May 1	104	294	238	229	228	116	122	110	94	135	99	108
June 1	109	309	249	221	236	118	120	113	98	137	104	108
July 1	.....	304	252	222	235	118	113	112	100	130	111	108
Aug. 1	.....	268	267	228	250	120	113	112	102	120	120	111
Sept. 1	.....	239	258	238	227	131	108	115	111	112	115	111
Oct. 1	.....	202	235	235	225	133	104	111	113	104	112	105
Nov. 1	.....	163	227	219	212	145	101	103	109	96	110	99
Dec. 1	.....	135	230	215	205	152	98	100	108	90	108	104

[1] Wholesale prices are computed average prices at terminal markets.

The relative wholesale prices for farm products, all commodities, and other groups of commodities for the month of May, 1921, are shown in Chart B–6 on page 40, and the relative wholesale prices of all farm products, all commodities, and specified farm products for the same month are shown in Chart B–7 on page 41.

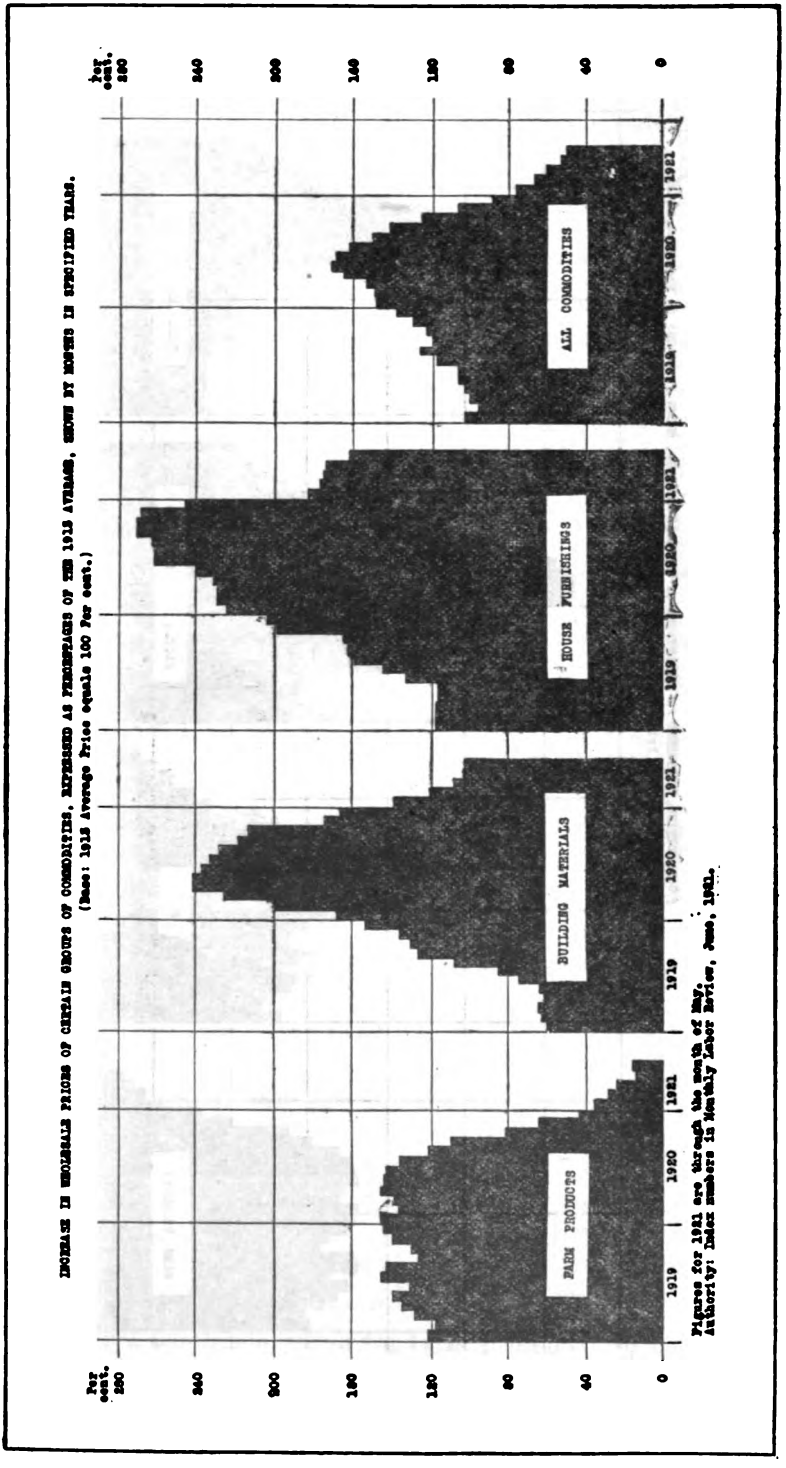
Digitized by Google

CHART B–3.



Digitized by Google

CHART B-4.

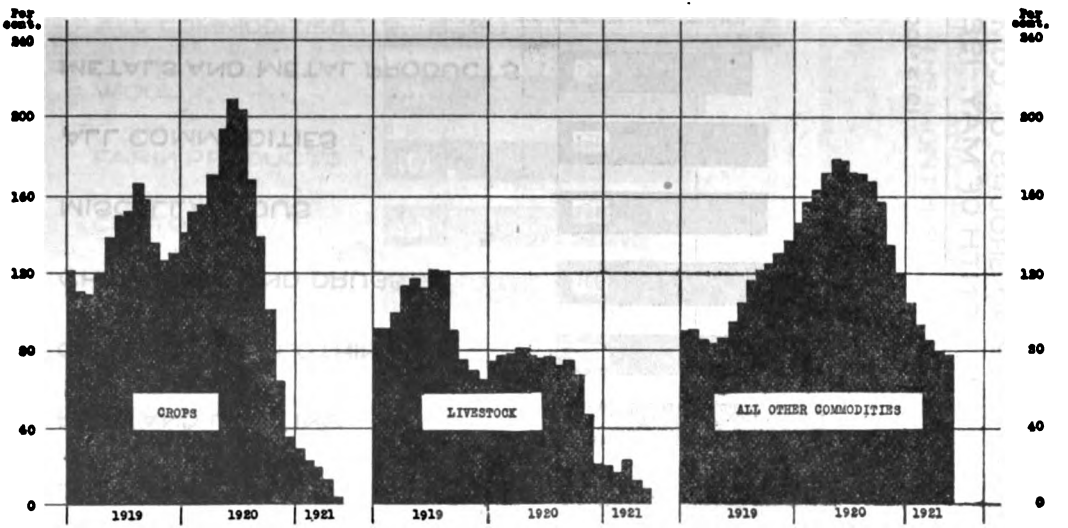


Digitized by Google

CHART B-5.

INCREASE IN PRICES PAID TO FARMERS FOR CROPS AND LIVESTOCK, AND WHOLESALE PRICES OF ALL COMMODITIES OTHER THAN FOOD AND FARM PRODUCTS, EXPRESSED AS PERCENTAGES OF THE 1913 AVERAGE, SHOWN BY MONTHS IN SPECIFIED YEARS.

(Base: 1913 Average Price equals 100 Per cent.)



Figures for 1921 are through the month of May.
Authority: Index numbers in Monthly Crop Reporter, June, 1921.

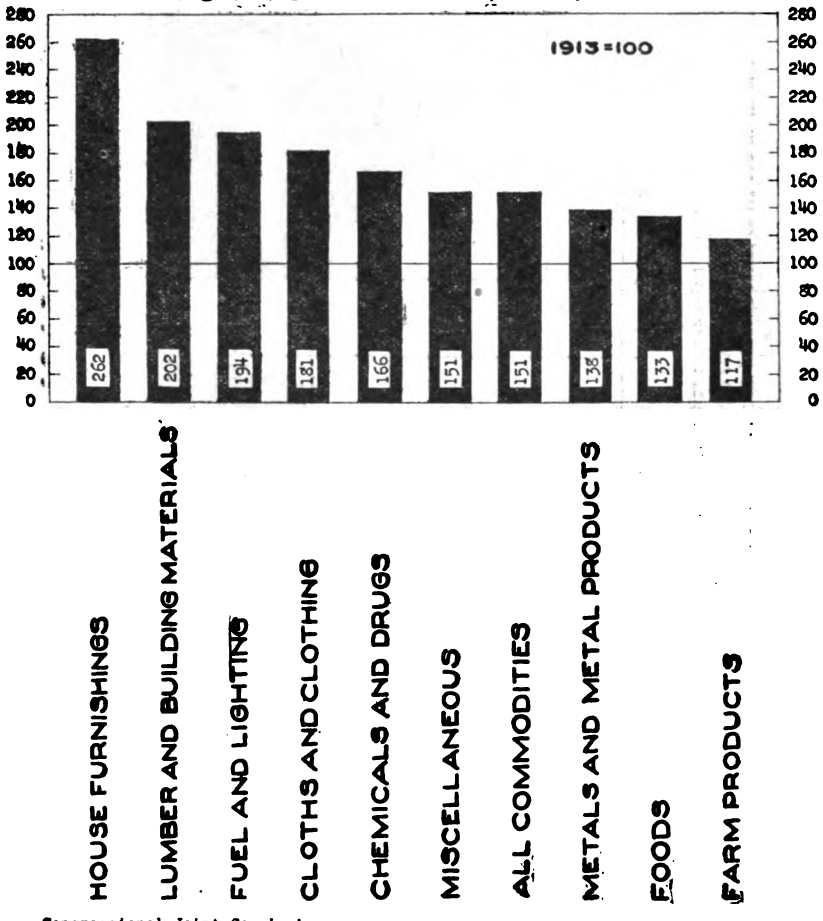
NOTE.—*Crops.*—Ten leading crops (wheat, corn, oats, barley, rye, buckwheat, potatoes, hay, cotton, flax)—about four-fifths of the value of all crops.

All other commodities (Bureau of Labor).—Index numbers of wholesale prices of all commodities, from which were deducted the commodities representing the foods, and farm products group.

Digitized by Google

CHART B-6.

RELATIVE WHOLESALE PRICES OF FARM PRODUCTS, ALL COMMODITIES, AND GROUPS OF COMMODITIES, FOR THE MONTH OF MAY, 1921

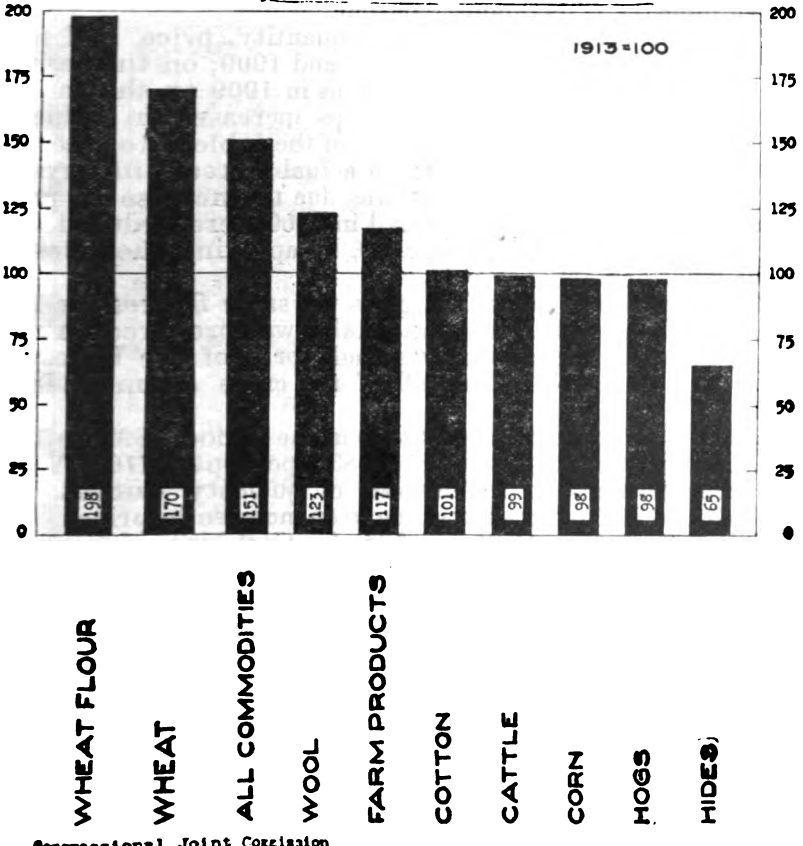


Congressional Joint Commission of Agricultural Inquiry

Digitized by Google

CHART B-7.

RELATIVE WHOLESALE PRICES OF ALL FARM PRODUCTS, ALL COMMODITIES, AND SPECIFIED FARM PRODUCTS FOR THE MONTH OF MAY, 1921



Congressional Joint Commission of Agricultural Inquiry

Digitized by Google

Chapter III.

THE RELATIVE GROWTH OF AGRICULTURE AND OTHER INDUSTRIES IN QUANTITY PRODUCTION.

Prices and values, while indicative of the condition of one industry as compared with another, are not accurate measures of the relative progress of the industries. A better measure of the progress and status of an industry is its quantity output.

On page 43 is a table, C–1, giving the quantity, price, and total value of the important farm crops in 1899 and 1909, on the basis of those years, and the total value of the crops in 1909 on the basis of the prices prevailing in 1899. These crops increased in value 83 per cent from 1899 to 1909. The purpose of the table is to ascertain what part of this increase was due to an actual increase in physical volume of production and what part was due to increase in price. To this end the value of crops produced in 1909 were reduced to a comparable basis with the prices in 1899, by applying the prices of 1899 to the crops of 1909.

The table on page 44, Table C–2, gives the same figures for 1909 and 1919 in the same way. The latter table was prepared on data available at the time the request was made for it of the Bureau of the Census and does not include all of the crops enumerated in Table C–1.

The Table C–1, on page 43, shows that in the period 1899 to 1909 of the total increase of $2,242,511,287, or 83.3 per cent, $270,379,936, or 10 per cent, was due to an increase in quantity output, and $1,972,131,351, or 66.6 per cent, was due to an increase in price.

The Table C–2, on page 44, shows that of a total increase in value of crops reported of $8,349,626,297, or 176.2 per cent, $498,379,279, or 10.5 per cent, was due to an increase in total output, and $7,851,247,018, or 149.9 per cent, was due to an increase in price.

The significant deduction to be drawn is that in the decade 1899 to 1909 the quantity of agriculture increased 10 per cent while in the following decade 1909 to 1919 the quantity of agriculture increased 10.5 per cent, and that large increases in total value of the crops compared was not a true measure of the progress of agriculture as an industry. From 1899 to 1909 the quantity output of farms increased 10 per cent, while the population 1900 to 1910 increased 21.5 per cent. From 1909 to 1919 the quantity output of farms increased 10.5 per cent, while the population increased 1910 to 1920, 14.5 per cent.

Moreover, the increase of 10.5 per cent in farm output from 1909 to 1919 was largely due to an increase in acreage and to a slight extent only to an increase in output per acre. The acreage of the groups compared in the tables C–1 and C–2 increased in this period 12.4 per cent, as shown by Table C–3 on page 45.

Digitized by Google

TABLE C-1.—*Quantity, value, and prices of crops: 1909 and 1899.*

Crops.	Unit.	Average value per unit.				Value of crops.			Increase 1899-1909.[1]				Excess of actual values of crops of 1909 over values computed for 1909 on basis of prices of 1899.	
		1909	1899	Increase, 1899 to 1909.		As reported, 1909.	Computed for 1909 on basis of prices of 1899.	As reported, 1899.	On basis of values as reported.		On basis of prices of 1899 for crops of 1909.			
				Amount.	Per cent.				Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
All crops						$5,487,161,223		$2,998,704,412	$2,488,456,811	83.0				
Crops compared						4,934,489,828	$2,962,358,477	2,691,978,541	2,242,511,287	83.3	$270,379,936	10.0	$1,972,131,351	66.6
Crops not compared						552,671,395		306,725,871	254,945,524	80.2				
Cereals						2,665,539,714	1,510,529,214	1,482,603,049	1,182,936,665	79.8	27,926,165	1.9	1,155,010,500	76.5
Corn	Bushel	$0.56365	$0.31061	$0.25304	81.5	1,438,553,919	792,735,621	828,192,388	610,361,531	73.7	−35,456,767	−4.3	645,818,298	81.5
Oats	do	.41176	.23013	.18163	78.9	414,697,422	231,773,814	217,098,584	197,508,838	91.0	14,675,230	6.8	182,923,608	78.9
Wheat	do	.96236	.56177	.40059	71.3	657,656,801	383,901,966	369,945,320	287,711,481	77.8	13,956,646	3.8	273,754,835	71.3
Barley	do	.53338	.34799	.18539	53.3	92,458,571	60,322,052	41,631,762	50,826,809	122.1	18,690,290	44.9	32,136,519	53.3
Buckwheat	do	.62835	.51167	.11668	22.8	9,330,592	7,597,958	5,747,853	3,582,739	62.3	1,850,105	32.2	1,732,634	22.8
Rye	do	.69179	.48069	.21110	43.9	20,421,812	14,190,188	12,290,540	8,131,272	66.2	1,899,648	15.5	6,231,624	43.9
Kafir corn and milo maize	do	.61469	.26446	.35023	132.4	10,816,940	4,653,783	1,367,040	9,449,900	691.3	3,286,743	240.4	6,163,157	132.4
Rice (rough)	do	.73355	.70306	.03049	4.3	16,019,607	15,353,832	6,329,562	9,690,045	153.1	9,024,270	142.6	665,776	4.3
Emmer and spelt	do	.43960		.43960		5,584,050			5,584,050				5,584,050	
Dry edible beans	do	1.93504	1.50729	.42775	28.5	21,771,482	16,958,761	7,633,636	14,137,846	185.2	9,325,125	122.2	4,812,721	28.4
Other beans	do	1.34121	.93511	.40610	43.4	241,060	168,070	134,084	106,976	79.8	33,986	25.3	72,990	43.4
Dry peas	do	1.53784	.83780	.70004	83.6	10,963,739	5,972,923	7,908,966	3,054,773	38.6	−1,936,043	−24.5	4,990,816	83.6
Peanuts	do	.94108	.60769	.33339	54.9	18,271,929	11,798,797	7,270,515	11,001,414	151.3	4,528,282	62.3	6,473,132	54.9
Flaxseed	do	1.48470	.98225	.50245	51.2	28,970,554	19,166,412	19,624,901	9,345,653	47.6	−458,489	− 2.3	9,804,142	51.2
Grass seed	do	2.26906	1.69132	.57774	34.2	15,137,683	11,283,384	8,228,417	6,909,266	84.0	3,054,967	37.1	3,854,299	34.2
Hay and forage	Ton	8.45534	6.11035	2.34499	38.4	824,004,877	595,476,430	484,254,703	339,750,174	70.2	111,221,727	23.0	228,528,447	38.4
Tobacco	Pound	.09879	.06565	.03314	50.5	104,302,856	69,310,930	56,987,902	47,314,954	83.0	12,323,050	21.6	34,991,896	50.5
Cotton	Bale	66.07208	33.95575	32.11633	94.6	703,619,303	361,603,882	323,758,171	379,861,132	117.3	37,845,711	11.7	342,015,421	94.6
Cotton seed	Ton	22.73902	9.84835	12.89067	130.9	121,076,984	52,438,859	46,950,575	74,126,409	157.9	5,488,284	11.7	68,638,125	130.9
Sugar beets	do	5.05503	4.18885	.86618	20.7	19,880,724	16,474,148	3,323,240	16,557,484	498.2	13,150,908	395.7	3,406,576	20.7
Sorghum cane	do	6.17659	3.19526	2.98133	93.3	10,174,457	5,263,430	6,103,102	4,071,355	66.7	−839,672	−13.8	4,911,027	93.3
Broom corn	Pound	.06503	.03946	.02557	64.8	5,134,434	3,115,760	3,588,414	1,546,020	43.1	−472,654	−13.2	2,018,674	64.8
Hemp	do	.05515	.04649	.00866	18.6	412,699	347,898	546,338	−133,639	−24.5	−198,440	−36.3	64,801	18.6
Hops	do	.19266	.08295	.10971	132.3	7,844,745	3,377,620	4,081,929	3,762,816	92.2	−704,309	−17.3	4,467,125	132.3
Potatoes	Bushel	.42761	.35995	.06766	18.8	166,423,910	140,090,728	98,380,110	68,043,800	69.2	41,710,618	42.4	26,333,182	18.8
Sweet potatoes and yams	do	.59814	.46733	.13081	28.0	35,429,176	27,680,923	19,869,923	15,559,336	78.3	7,811,083	39.3	7,748,253	28.0
Small fruits	Quart	.07027	.05403	.01624	30.1	29,974,481	23,047,354	25,029,757	4,944,724	19.8	−1,982,403	− 7.9	6,927,127	30.1
Orchard fruits	Bushel	.65191	.39437	.25754	65.3	140,867,347	85,216,927	83,750,961	57,116,386	68.2	1,465,966	1.8	55,650,420	65.3
Nuts	Pound	.07136	.04871	.02265	46.5	4,447,674	3,035,997	1,949,931	2,497,743	128.1	1,086,066	55.7	1,411,677	46.5

[1] A minus sign (−) denotes decrease.

Source: Summary for all crops, Thirteenth Census of the United States, 1910, Vol. V, page 535, Agriculture, General Report and Analysis.

Digitized by Google

TABLE C-2.—*Quantity, value, and prices of principal crops in the United States: 1919 and 1909.*

Crop.	Unit.	Average value per unit.				Value of crops.			Increases, 1909–1919.				Excess of actual values of crops of 1919 over values computed for 1919 on basis of prices of 1909.	
		1919	1909	Increase, 1909–1919.		As reported, 1919.	Computed for 1919 on basis of prices of 1909.	As reported, 1909.	On basis of values as reported.		On basis of prices of 1909 for crops of 1919.			
				Amount.	Per cent.				Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Crops for which 1919 figures are available.						$13,087,767,743	$5,236,520,725	[1] $4,738,141,446	$8,349,626,297	176.2	$498,379,279	10.5	$7,851,247,018	149.9
Cereals:														
Corn	Bushels.	$1.49541	$0.56365	$0.93176	165.3	3,513,174,543	1,324,183,974	1,438,553,919	2,074,620,624	144.2	−114,369,945	−8.0	2,188,990,569	165.3
Wheat	...do....	2.19386	.96236	1.23150	128.0	2,074,078,801	909,818,238	657,656,801	1,416,422,000	215.4	252,161,437	38.3	1,164,260,563	128.0
Oats	...do....	.81053	.41176	.39877	96.8	855,255,468	434,482,069	414,697,422	440,558,046	106.2	19,784,647	4.8	420,773,399	96.8
Barley	...do....	1.31471	.53338	.78133	146.5	160,427,256	65,065,573	92,458,571	67,968,684	73.5	−27,372,998	−29.6	95,341,682	146.5
Rye	...do....	1.53355	.69179	.84176	121.7	116,537,965	52,570,660	20,421,812	96,116,153	470.7	32,148,848	157.4	63,967,305	121.7
Buckwheat	...do....	1.55356	.62835	.92521	147.2	19,715,295	7,973,999	9,330,592	10,384,703	111.3	−1,356,593	−14.5	11,741,296	147.2
Peanuts	...do....	2.28604	.94108	1.34496	142.9	62,751,701	25,832,580	18,271,929	44,479,772	243.4	7,560,651	41.4	36,919,121	142.9
Hay and forage, not including corn cut for forage.	Ton.....	18.01803	8.45534	9.56269	113.1	2,317,057,894	1,087,328,103	824,004,877	1,493,053,017	181.2	263,323,226	32.0	1,229,729,791	113.1
Tobacco	Pounds.	.32303	.09879	.22424	227.0	445,366,926	136,205,141	104,302,856	341,064,070	327.0	31,902,285	30.6	309,161,785	227.0
Cotton	Bales....	176.45985	66.07208	110.38777	167.1	2,007,430,242	751,644,571	703,619,303	1,303,810,939	185.3	48,025,268	6.8	1,255,785,671	167.1
Cotton seed	Tons....	65.26977	22.73902	42.53075	187.0	347,739,123	121,147,154	121,076,984	226,662,139	187.2	70,170	.1	226,591,969	187.0
Sugar beets	...do....	11.02077	5.05503	5.96574	118.0	66,051,989	30,296,862	19,880,724	46,171,265	232.2	10,416,138	52.4	35,755,127	118.0
Potatoes	Bushels.	2.20183	.42761	1.77422	414.9	640,192,621	124,329,566	166,423,910	473,768,711	284.7	−42,094,344	−25.3	515,863,055	414.9
Sweet potatoes	...do....	1.59869	.59814	1.00055	167.3	124,844,475	46,709,897	35,429,176	89,415,299	252.4	11,280,721	31.8	78,134,578	167.3
Apples	...do....	1.76898	.56960	1.19938	210.6	241,573,577	77,785,144	83,231,492	158,342,085	190.2	−5,446,348	−6.5	163,788,433	210.6
Peaches	...do....	1.88552	.81141	1.07411	132.4	95,569,868	41,127,194	28,781,078	66,788,790	232.1	12,346,116	42.9	54,442,674	132.4

[1] Total value of all crops in 1909, whose production was reported in definite units, was $4,934,480,828.

Digitized by Google

TABLE C-3.—*Acreage and production of principal crops in the United States: 1919 and 1909.*

ACREAGE.

Crops.	1919	1909	Increase.	
			Amount.	Per cent.
Crops for which 1919 figures are available	336,854,642	[1] 299,740,628	37,114,014	12.4
Cereals:				
Corn	87,774,579	98,382,665	−10,608,086	−10.8
Wheat	73,099,421	44,262,592	28,836,829	65.1
Oats	37,991,002	35,159,441	2,831,561	8.1
Barley	6,472,948	7,698,706	− 1,225,758	−15.9
Rye	7,679,005	2,195,561	5,483,444	249.8
Buckwheat	742,627	878,048	− 135,421	−15.4
Peanuts	1,125,100	869,887	255,213	29.3
Hay and forage, not including corn cut for forage	81,661,209	72,280,776	9,380,433	13.0
Tobacco	1,870,312	1,294,911	575,401	44.4
Cotton	33,740,106	32,043,838	1,696,268	5.3
Sugar beets	636,414	364,093	272,321	74.8
Potatoes	3,258,192	3,668,855	− 410,663	−11.2
Sweet potatoes	803,727	641,255	162,472	25.3

TREES OF BEARING AGE.

Apples	115,309,165	151,322,840	−36,013,675	−23.8
Peaches	65,646,101	94,506,657	−28,860,556	−30.5

[1] Total acreage of all crops with acreage report in 1909 was 311,293,382.

PRODUCTION.

Crops.	Unit.	1919	1909	Increase.	
				Amount.	Per cent.
Cereals:					
Corn	Bushel	2,349,301,825	2,552,189,039	−202,887,805	− 7.9
Wheat	do	945,403,215	683,379,259	262,023,956	38.3
Oats	do	1,055,182,798	1,007,142,980	48,039,818	4.8
Barley	do	122,024,773	173,344,212	− 51,319,439	− 29.6
Rye	do	75,992,223	29,520,457	46,471,766	157.4
Buckwheat	do	12,690,378	14,849,332	− 2,158,954	− 14.5
Peanuts	do	27,449,930	19,415,816	8,034,114	41.4
Hay and forage, not including corn cut for forage.	Ton	128,596,615	97,453,735	31,142,880	32.0
Tobacco	Pound	1,378,734,095	1,055,764,806	322,969,289	30.6
Cotton	Bale	11,376,130	10,649,268	726,862	6.8
Cotton seed	Ton	5,327,721	5,324,634	3,087	.1
Sugar beets	do	5,993,409	3,932,857	2,060,552	52.4
Potatoes	Bushel	290,754,580	389,194,965	− 98,440,385	− 25.3
Sweet potatoes	do	78,091,913	59,232,070	18,859,843	31.8

TREES OF BEARING AGE.

Apples	Bushel	136,560,997	145,412,318	− 8,851,321	− 6.1
Peaches	do	50,686,082	35,470,276	15,215,806	42.9

Digitized by Google

In general, the output of agriculture has not only lagged behind the growth in population, but to a much larger degree has failed to keep the pace of the output of other industries, as is shown by the following Table C–4, prepared by Dr. Edmund E. Day, which gives his estimate of the physical volume of production by years from 1899 to 1919 of different manufactured products, on the one hand, and the products of mines and agriculture on the other, as compared with the growth in population.

TABLE C–4.—*Index numbers of the growth of population and the physical volume of production of manufactured products and of mining and agriculture, 1899 to 1919.*

Year.	Growth of population.	Manufactured products.											Mining.	Agriculture.
		Lumber.	Food.	Textiles.	Tobacco.	Liquors.	Stone, clay, and glass.	Iron.	Chemicals and allied products.	Metal products other than iron and steel.	Vehicles.	All products.		
1899	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1900	101.8	98.1	100.7	100.6	106.5	105.7	105.4	95.5	102.6	102.3	117.4	101.0	105.7	100.6
1901	103.8	96.2	123.1	101.5	112.9	112.9	125.2	117.5	115.5	113.1	147.2	112.4	114.6	89.3
1902	106.0	94.3	117.3	116.0	118.1	120.9	142.0	133.3	130.2	145.8	183.3	123.5	122.7	113.7
1903	108.1	92.4	124.5	116.1	126.0	125.6	143.1	130.2	138.6	142.4	210.3	125.5	135.0	105.0
1904	110.3	90.7	125.0	115.8	124.8	129.4	146.8	120.4	146.6	141.4	186.5	123.2	136.3	116.0
1905	112.4	97.4	141.3	129.2	128.4	137.6	165.3	164.2	165.5	163.9	284.4	144.4	161.6	117.5
1906	114.5	109.1	142.1	130.4	138.2	149.4	178.4	178.7	180.4	184.7	356.7	155.0	169.9	125.0
1907	116.7	115.8	132.2	131.9	141.8	153.6	177.4	179.7	184.4	161.8	430.5	156.3	185.9	112.4
1908	118.9	112.4	136.2	121.5	136.3	149.3	155.3	107.7	182.0	148.5	286.8	132.7	154.2	118.8
1909	121.0	126.2	144.3	149.2	143.6	151.5	192.6	171.8	199.2	192.6	354.5	163.4	189.4	118.1
1910	123.1	123.2	134.3	141.2	150.7	161.6	200.7	183.2	189.6	198.4	522.2	166.0	201.6	123.2
1911	125.3	116.1	140.4	130.3	153.7	165.6	193.2	159.6	208.3	199.0	377.6	158.3	194.4	117.0
1912	127.4	118.7	149.5	148.4	158.6	168.5	204.0	201.0	233.4	216.3	650.6	181.4	216.7	138.1
1913	129.6	113.4	151.0	155.8	169.1	173.4	211.2	211.2	240.6	223.9	769.8	187.1	227.2	122.1
1914	131.6	101.8	152.7	157.3	165.0	164.5	193.8	161.3	238.8	200.3	657.8	171.4	202.6	135.0
1915	133.2	95.6	169.7	167.8	158.8	158.3	208.6	205.3	247.8	248.1	747.4	187.2	227.6	141.0
1916	134.8	100.6	150.8	207.6	173.4	163.8	238.1	268.9	294.8	319.0	1304.6	218.6	267.0	124.9
1917	136.5	90.5	159.5	201.4	188.8	151.2	227.5	262.7	299.0	305.0	1483.3	215.2	277.2	135.0
1918	138.1	80.4	194.2	202.7	183.0	105.0	200.5	267.9	353.8	343.5	1019.5	214.0	279.6	133.2
1919	139.7	85.5	191.1	190.7	176.0	.....	178.8	212.7	282.2	296.1	1373.8	195.3	228.4	137.6

In Table C–5, on page 47, Dr. Walter W. Stewart makes an estimate as to the quantity production of (1) all commodities, (2) materials (3) manufactures, and (4) transportation. The "materials" includes products of the farm and of the mines, separately listed; "all materials" adds to the materials from farms and mines those produced in forests and by fisheries; "manufactures" include manufactures of farm products and of mineral products, separately listed in the table, while the column marked "Total manufactures" includes these two items plus forestry products and fishery products. "Transportation" is based on the freight-ton miles and on passenger miles. "All commodities" includes "transportation," "manufactures" and "materials:"

A comparison of the table prepared by Dr. Day with the table prepared by Dr. Stewart shows a marked degree of agreement with respect to the output of agriculture. The Day table shows an increase in agricultural output of 37.6 per cent, and the Stewart table shows an increase in the output of agricultural products of 30 per cent based upon the average production of 1911–1913 as 100. Both tables show that in quantity output agriculture lagged far behind other industries.

Digitized by Google

TABLE C-5.—*The relative production of farm products, mineral products, manufactured products, transportation, and all commodities, by years, 1890–1919.*

[Average production 1911–1913=100.]

Years.	Materials.			Manufacture.			Total transportation.	All commodities.	Price, all commodities.
	Products of—		Total materials.	Manufactured from—		Total manufactures.			
	Farms.	Mines.		Farm products.	Mineral products.				
1890	57	30	52	61	17	42	29	45	82
1891	73	32	66	68	16	46	31	54	83
1892	62	34	58	67	19	47	34	50	77
1893	63	34	58	61	16	42	36	49	78
1894	62	33	57	61	17	43	32	48	70
1895	74	37	68	75	23	53	32	57	71
1896	79	39	72	65	20	46	35	57	67
1897	78	40	72	87	26	61	35	62	67
1898	84	43	77	78	32	58	48	66	70
1899	82	48	77	70	38	57	44	65	75
1900	82	52	78	74	35	57	50	66	81
1901	73	55	71	87	44	69	52	67	80
1902	92	57	87	87	50	71	57	77	86
1903	86	64	83	88	49	68	62	75	86
1904	94	66	89	91	52	74	63	80	87
1905	94	74	90	98	71	86	68	86	87
1906	100	77	96	97	83	90	77	91	90
1907	89	86	90	98	82	91	84	89	95
1908	95	79	91	94	57	78	77	84	92
1909	95	87	95	102	88	96	86	94	98
1910	98	94	98	95	92	93	95	96	101
1911	93	93	93	97	85	92	92	93	96
1912	111	101	109	102	107	104	101	106	102
1913	96	106	98	101	108	104	106	101	101
1914	108	100	106	103	85	95	99	101	101
1915	116	108	113	110	110	111	106	112	102
1916	101	123	106	117	146	131	123	117	126
1917	110	131	113	118	148	135	135	124	178
1918	106	133	111	126	145	137	141	125	199
1919	112	112	110	120	118	126	138	120	215

NOTE.—The commodities included are as follows:
Materials from:
1. Farms—Apples, barley, corn, raw cotton, hay, oats, peaches, white potatoes, sweet potatoes, rice, rye, beet sugar, cane sugar, tobacco, wheat, raw wool.
2. Mines—Anthracite coal, bituminous coal, copper, gold, iron ore, lead, petroleum, pyrites, quicksilver, salt, silver, sulpher ore, zinc.
3. Forests—Douglas fir, hemlock, oak, spruce, western yellow pine, white pine, yellow pine.
4. Fisheries—Cod, haddock, mackerel.
Manufactures:
1. Manufactured from farm products—Coffee used in manufacture, cotton used in manufacture, cotton seed, cotton-seed oil, cotton cake and meal, cotton hulls, cotton linters, manila hemp used in manufacture, jute used in manufacture, sisal grass used in manufacture, molasses, cigarettes, cigars, tobacco and snuff, wheat used in manufacture, beef, mutton, pork, hides, cattle, skins, sheep, silk used in manufacture, wool used in manufacture.
2. Manufactured from mineral products—Common brick, front brick, vitrified brick, cement, coke, copper used in manufacture, gold used in manufacture, pig iron, steel ingots and castings, merchant bars, plates and sheets, rails, structural shapes, skelp, wire rods, tin plate, cut nails, wire nails, lead used in manufacture, lime, silver used in manufacture, tin used in manufacture, and zinc used in manufacture.
3. Manufactured from forest products—Lath, shingles, turpentine, rubber used in manufacture.
4. Manufactured from fishery products—Salmon, canned.
Transportation:
1. Transportation—Freight, ton-miles; passenger, passenger miles.

Judged by the standard of quantity output agriculture has lagged far behind other industries. It is safe to conclude also that prices for agricultural products have not been sufficient to induce an increase in quantity production of these products comparable with the increase in output of the products of other industries.

Digitized by Google

Chapter IV.

WAGES AND INCOMES IN AGRICULTURE AND OTHER INDUSTRIES

In order to get accurate and inclusive data as to the economic status of the farmers in this country, as compared with the wages and incomes in other of our industries, the commission called as a witness Dr. Willford I. King.

Dr. King and his coworkers had just completed a detailed and scientific analysis of the distribution of the national income of the United States from 1909 to 1919, inclusive, for the National Bureau of Economic Research (Inc.).

Dr. King estimates the aggregate income of the American people to range in dollars from $28,800,000,000 in 1909, to $60,900,000,000 in 1918.

Reducing this income in dollars to purchasing power, on the basis of prices in 1913, he finds that the aggregate income of the American people in purchasing power moved from $30,100,000,000 in 1909, to $39,400,000,000 in 1918, reaching its peak in 1917 at $41,800,000,000.

Different members of the staff of the National Bureau of Economic Research made two independent estimates as to our aggregate income—one by sources of production (by W. I. King) and one by incomes received (by Dr. O. W. Knauth). A third estimate was then made by checking each of these against the other. The estimates for each year by each method, at the prices of each year, and for all years, at the prices of 1913, and the relative change by years in the income based on the national income of 1913 as equal to 100, all are given in Table D–1, on page 49.

It is clear from this table that the gains in money income after the United States entered the war were largely nominal, due to price inflation. The increase in the real national income—that is, in the quantity of serviceable goods available for use by the population—flows either from larger harvests or from a larger output in industrial activities. As Dr. Wesley C. Mitchell, of the National Bureau of Economic Research, has pointed out: "From the dull year 1911 to the busy year 1912, and still more from the exceedingly depressed year 1914 to the exceedingly active year 1916, the gain is great. But once the factories and workshops, the mines and railways, the ships and shops are working at full capacity, further increases of output slow down to the rate made possible by current increase in population, development of natural resources, construction of new equipment, and improvement in methods. And when a large number of the most effective workers are drafted into new activities, as they were in 1918, it is difficult if not impossible to prevent production in physical terms from falling off, however large a money premium is offered for intense effort."

Digitized by Google

TABLE D–1.—*The national income in money of variable and in money of constant purchasing power, by years, 1909–1919.*

[Source: National Bureau of Economic Research.]

(In billions of dollars.)

Years.	At prices of each year.			At prices of 1913.		
	Estimate by sources of production.	Estimate by incomes received.	Most probable estimate.	Estimate by sources of production.	Estimate by incomes received.	Most probable estimate.
1909	28.8	.....	28.8	30.1	.....	30.9
1910	31.8	31.1	31.4	32.5	31.8	32.2
1911	31.2	31.2	31.2	31.7	31.7	31.7
1912	33.6	32.4	33.0	33.7	32.6	33.2
1913	35.6	33.3	34.5	35.6	33.3	34.5
1914	33.9	32.5	33.2	33.6	32.3	33.0
1915	35.4	35.9	35.2	35.6	35.0	35.3
1916	45.8	45.5	45.6	41.6	40.1	40.4
1917	53.8	53.9	53.8	41.8	39.6	40.7
1918	60.9	61.7	61.3	39.4	38.4	38.9
1919	.....	66.0	.....	.....	37.3	.....

RELATIVE FIGURES ON THE BASE, NATIONAL INCOME IN 1913=100.

1909	81.0	.....	84.0	85.0	.....	87.0
1910	89.0	93.0	91.0	91.0	95.0	93.0
1911	88.0	94.0	91.0	89.0	95.0	92.0
1912	94.0	97.0	96.0	95.0	98.0	96.0
1913	100.0	100.0	100.0	100.0	100.0	100.0
1914	95.0	98.0	97.0	94.0	97.0	96.0
1915	102.0	108.0	105.0	100.0	105.0	102.0
1916	129.0	137.0	133.0	117.0	120.0	117.0
1917	151.0	162.0	156.0	118.0	119.0	118.0
1918	171.0	185.0	178.0	111.0	115.0	113.0
1919	.....	198.0	.....	.....	112.0	.....

Thus there was only a very slight gain registered in quantity production in 1917 over 1916 (118 over 117), while there was a large gain in 1912 over 1911 (96 over 92).

The gain in purchasing power of the products of agriculture do not differ very materially from the gain in purchasing power of all commodities during the war period.

Our national job is to utilize all our equipment to as nearly 100 per cent as possible every year.

More significant than the nominal and actual increase in our national income from 1909 to 1919 is the income per capita at the prices of each year and at the prices of 1913 as given in Table D–2, on page 50.

Our per capita income has not increased as rapidly as did the national income. Our per capita income, based on the prices of 1913, was largest in 1916 and was back to a 1913 level in 1919.

Both the national income and the income per capita in the United States was larger at the outbreak of the war in 1914 than was either the national income or the per capita income of any other country. (See Table D–3, page 50.)

70678—H. Rept. 408, pt 1, 67–1——4

Digitized by Google

TABLE D–2.—*Per capita estimate of the national income in money of variable and in money of constant purchasing power, by years, 1909-1919.*

[Source: National Bureau of Economic Research.

[In dollars per annum.]

Years.	At prices of each year.			At prices of 1913.	
	Population in millions.	Income in billion dollars.	Per capita income in dollars.	Income in billion dollars.	Per capita income in dollars.
1909	90.4	28.8	319	29.9	331
1910	92.2	31.4	340	32.2	349
1911	93.8	31.2	333	31.7	338
1912	95.3	33.0	346	33.2	348
1913	97.3	34.5	355	34.5	355
1914	99.2	33.2	335	33.0	333
1915	100.4	36.2	360	35.3	351
1916	101.7	45.6	448	40.4	397
1917	103.1	53.8	522	40.7	395
1918	104.2	61.3	588	38.9	373
1919	104.8	(66.0)	(630)	(37.3)	(356)
RELATIVE FIGURES ON THE BASE PER CAPITA INCOME, IN 1913=100.					
1909		84	90	87	93
1910		91	96	93	98
1911		91	94	92	95
1912		96	98	96	98
1913		100	100	100	100
1914		97	95	96	94
1915		105	102	102	99
1916		133	127	117	112
1917		156	148	118	111
1918		178	166	113	105
1919		(198)	(178)	(112)	(100)

TABLE D–3.—*The estimated national and per capita income of various countries at the outbreak of war in 1914, and the approximate accuracy of the respective estimates.*

Adapted from the Summary by Sir Josiah Stamp, Journal of the Royal Statistical Society, July, 1919.]

Country.	Estimates based upon the work of—	Approximate accuracy, grade.[1]	National income, millions of dollars.	Per capita income, dollars.
United States	National Bureau of Economic Research.	I	33,500	335
United Kingdom	Bowley, Stamp	I	10,950	243
Germany	Helfferich	I	10,460	146
France	Pupin	II	7,300	185
Italy		IV	3,890	112
Austria-Hungary		IV	5,350	102
Spain	Barthe	IV	1,120	54
Australia	Official, Knibbs	I	1,260	263
Canada	Giffen	IV	1,460	195
Japan	Stamp	III	1,580	29

[1] Grade I. Estimate is not likely to be inaccurate to a greater extent than 10 per cent.
Grade II. Estimate is not likely to be inaccurate to a greater extent than 20 per cent.
Grade III. Estimate is not likely to be inaccurate to a greater extent than 30 per cent.
Grade IV. Estimate may be inaccurate to a greater extent than 40 per cent.

Dr. King has made an estimate of the "net value" of the products of agriculture in this country. To arrive at this net value, the total value of the products of agricluture was first estimated. This is the total value of all crops and live stock either sold off the farm to the market, or consumed on the farm without duplication. To this is added the increase in land values due to improvements by farmers.

Digitized by Google

And then deductions are made for payments made by farmers for such items as implements, fertilizers, automobiles, harness, saddles, insurance against fire and wind, and interest paid to banks for loans. The resulting "net value product" of agriculture is given in the following table, D–4:

TABLE D–4.—*An estimate of the total net value product of agriculture in the continental United States, 1909–1920.*

[Source: National Bureau of Economic Research.]

A.	B.	C.	D.	E.	F.
Calendar year.	Value of animal products (millions).	Net value of crops consumed or sold off farm (millions).	Increase in land value due to improvements by farmers (millions).	Business expenditure for products of other industries (millions).	Net value product of agriculture (millions), B+C+D−E.
1909	$2,218	$2,762	$25	$319	$4,686
1910	3,277	2,696	139	384	5,728
1911	2,968	2,585	219	404	5,368
1912	2,585	2,816	290	405	5,286
1913	2,989	2,971	376	449	5,887
1914	3,359	2,820	328	467	6,040
1915	3,166	3,347	310	446	6,376
1916	3,041	4,541	218	551	7,249
1917	3,902	6,429	174	785	9,720
1918	6,189	7,119	405	1,031	12,682
1919	7,228	8,362	520	1,276	14,835
1920	5,882	5,094	177	[a] 1,300	[a] 9,853

[a] Rough preliminary figures only.

The net value of agricultural products increased rapidly in 1918 and in 1919, with rising prices, but slumped badly in 1920.

The per cent that the net value product originating in agriculture bears to the total net value product of all our industries in dollars, is shown in Table D–5. Agriculture has produced from 16 to 23 per cent of the national income of the United States, normally about 17 or 18 per cent, and yet about 30 per cent of the persons gainfully employed in the United States are engaged in agriculture.

TABLE D–5.—*The per cent of the net value product of all industries in the United States, produced by agriculture.*

[Source: National Bureau of Economic Research.]

Year.	Total net value product of all industries (millions).	Net value product of agriculture (millions).	Per cent of the net value product originating in agriculture.
1909	$28,775	$4,686	16.3
1910	31,766	5,728	18.0
1911	31,188	5,368	17.2
1912	33,555	5,286	15.8
1913	35,579	5,887	16.5
1914	33,936	6,040	17.8
1915	36,425	6,376	17.5
1916	45,761	7,249	15 8
1917	53,762	9,720	18.1
1918	60,857	12,682	20.8
1919	65,000	14,835	22.8
1920	.....	9,853	.....

Digitized by Google

The percentages of the net value product received by the employees in various industries from 1909 to 1918 is shown in Table D–6. The proportion taken by employees increased during this period in factories, in transportation by land, in public utilities, and most markedly in banking; was fairly constant in the hand trades and for all industries, but decreased in transportation by water, in the production of minerals, in unclassified industries, and most markedly in agriculture.

TABLE D–6.—*The percentages of net value product of various branches of industry, received by employees as payment for services, 1909–1918.*

[Based upon the estimate by sources of production.]

[Caution: These figures show neither the "share of labor" in the value product nor the total income of the employees.]

Year.	All industries.	Agriculture.[1]	Production of minerals.	Manufacturing.	
				Factories.[2]	Hand trades.[3]
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
1909	52.3	15.3	71.0	72.2	57.3
1910	51.6	12.5	73.7	71.5	58.9
1911	53.3	14.1	73.8	76.5	58.6
1912	54.4	14.4	71.4	74.6	59.3
1913	55.0	13.4	73.4	74.5	66.7
1914	54.1	12.6	72.7	77.8	58.9
1915	53.4	12.3	67.4	75.5	58.7
1916	51.8	11.7	60.9	68.6	57.8
1917	51.1	10.8	63.1	71.0	61.6
1918	53.9	9.8	70.6	78.1	59.6
1919	.....	10.1	.....	.....	.....

TRANSPORTATION.

Year.	Railway, express, sleeping-car, switching and terminal companies.	Street railways, electric light and power, telegraph, and telephone companies.	Transportation by water.	Banking.	Government.[4]	Unclassified industries.
1909	59.6	50.3	83.5	26.4	93.3	60.6
1910	60.3	50.7	75.0	24.3	92.1	61.7
1911	62.8	51.5	81.7	26.5	91.6	62.3
1912	64.2	51.7	77.7	28.6	91.7	63 0
1913	66.4	52 9	79.0	31.6	91.7	64.0
1914	66.3	53.2	85.6	31.9	91.5	64.0
1915	61.5	51.1	79.2	34.5	91.2	62.8
1916	60.9	52.5	72.2	35.5	91.4	58.2
1917	67.4	55.4	79.1	34.8	90.8	54.4
1918	78.2	62.8	83.2	36.7	90.4	54 8

[1] Includes stock raising, market gardening, etc.
[2] Includes lumbering and shipbuilding.
[3] Includes building and construction other than shipbuilding.
[4] Includes schools and Government-operated enterprises under all States and local as well as national Government; the share of the employees includes pensions (paid for the services of ex-employees). Table prepared by Dr. Willford I. King.

In the following table D–7 is given the distribution of net personal incomes reported to the Bureau of Internal Revenue in 1917 and in 1918, before and after deduction of Federal income taxes:

Digitized by Google

TABLE D–7.—*Distribution of net personal incomes reported to the Bureau of Internal Revenue in 1917 and in 1918, before and after deduction of Federal income taxes.*

Income classes.	Average rate of tax.	Average tax per individual.	Average income before deducting tax.	Average income after deducting tax.	Percentage of total reported income.	
					Before deducting tax.	After deducting tax.
1917.	*Per cent.*				*Per cent.*	*Per cent.*
$1,000–$2,000	0.66	$10	$1,500	$1,490	18.04	18.86
$2,000–$3,000	.44	11	2,462	2,451	15.12	15.86
$3,000–$5,000	.36	33	3,773	3,740	15.50	16.19
$5,000–$10,000	2.41	163	6,752	6,589	13.39	13.76
$10,000–$25,000	4.78	717	14,997	14,279	12.36	12.40
$25,000–$50,000	7.34	2,520	34,297	31,777	7.33	7.45
$50,000–$100,000	10.04	6,836	68,084	61,248	6.20	5.88
$100,000–$150,000	13.92	16,889	121,288	104,399	2.93	2.66
$150,000–$300,000	18.27	36,949	202,238	165,289	3.48	2.99
$300,000–$500,000	25.93	89,853	375,501	285,648	1.54	1.23
$500,000–$1,000,000	27.83	188,410	681,369	492,959	1.57	1.20
$1,000,000 and over	35.65	776,064	2,176,141	1,400,077	2.24	1.52
1918.						
$1,000–$2,000	1.19	17	1,472	1,454	14.02	14.91
$2,000–$3,000	.98	24	2,423	2,399	22.78	24.27
$3,000–$5,000	2.35	89	3,792	3,703	22.20	23.33
$5,000–$10,000	4.34	291	6,719	6,427	13.47	13.87
$10,000–$25,000	8.20	1,222	14,897	13,675	10.90	10.76
$25,000–$50,000	13.32	4,563	34,267	29,704	6.14	5.73
$50,000–$100,000	21.69	14,749	67,999	53,251	4.27	3.60
$100,000–$150,000	33.68	40,577	120,486	79,910	1.78	1.27
$150,000–$300,000	44.64	89,872	201,470	111,598	1.92	1.14
$300,000–$500,000	54.77	227,238	378,391	171,153	.91	.44
$500,000–$1,000,000	58.65	392,327	668,964	276,637	.75	.33
$1,000,000 and over	64.65	1,326,646	2,052,043	725,398	.86	.33

Dr. King, in the following table, D–8, on page 54, makes an estimate as to the amount received by the farmers of the country as a whole as returns on capital on the one hand, and as rewards for labor on the other hand. Dr. King assumed an interest rate on the value of farm property at 5 per cent, save for 1919 and 1920, in which years he assumed an interest rate of 5½ per cent and 6½ per cent, respectively. Had the same interest rate been assumed for 1919 and 1920 as for preceding years, the returns to farmers for labor and management would have been greater and the returns to property correspondingly less.

With this table as a base, Table D–9, on page 54, was prepared to show the average reward per farmer as return to property and as return for labor, risk, and management.

It will be noted from the table:

1. That rewards to property on the one hand, and for labor, risk, and management, on the other hand, were not very different in prewar years, but that the returns from labor, risk, and management increased over the returns for property during the war years.

2. The purchasing power per farmer for labor, risk, and management averaged but $219 in 1920, as compared with $833 in 1919 and $444 in 1913. Assuming an interest rate of 5 per cent in 1919 and in 1920 (instead of 5½ and 6½ per cent, respectively, as assumed in Table D–8), the purchasing power for labor, risk, and management per farmer in this country would have been $864 and $304 in 1919 and 1920, respectively.

Digitized by Google

TABLE D–8.—*An estimate of the rewards for labor, risk, and management received by the farmers of the continental United States, 1909–1920.*

A	B	C	D	E	F	G	H	I	J
Year.	Total value of farm property [1] (millions).	Assumed interest rate on investment.	Rewards ascribable to property (millions) B. C.	Total returns to entrepreneurs and other property owners (millions).	Reward for farmers' risk, management, and labor (millions) E–D.	Number of farmers (thousands).	Average reward per farmer $\frac{F}{G}$ exclusive of returns on property.	Index of prices of goods consumed by farmers.	Average reward per farmer at prices of 1913 $\frac{H}{I}$ exclusive of returns on property.
1909	[2] $40,059	0.05	$2,003	3,969	$1,966	6,330	$311	$0.955	$326
1910	[3] 41,400	.05	2,070	5,012	2,942	6,362	462	.978	472
1911	[2] 42,225	.05	2,111	4,612	2,501	6,376	392	.984	398
1912	[2] 42,917	.05	2,146	4,525	2,379	6,388	372	.995	374
1913	[2] 45,227	.05	2,261	5,101	2,840	6,400	444	1.000	444
1914	[2] 46,619	.05	2,331	5,273	2,942	6,410	459	1.011	454
1915	[2] 48,199	.05	2,410	5,590	3,180	6,418	495	1.023	484
1916	[2] 52,687	.05	2,635	6,401	3,767	6,425	586	1.097	534
1917	[2] 57,110	.05	2,855	8,661	5,805	6,432	903	1.280	705
1918	[2] 64,122	.05	3,206	11,432	8,226	6,438	1,278	1.547	826
1919	[2] 71,848	.055	3,951	13,335	9,383	6,443	1,456	1.747	833
1920	[4] 78,707	.065	5,116	8,111	2,995	6,448	465	2.124	219

[1] Includes a small allowance for cash resources used as working capital.
[2] Interpolated.
[3] Abstract of Census of 1910, p. 265.
[4] Estimated from preliminary census reports for 25 States.

TABLE D–9.—*Rewards from labor and management, and from property, with total rewards received by the farmers of the United States, 1909–1920.*

L	M	N	P	Q
Year.	Property return produced per farmer [1] $\frac{D}{G}$ [2]	Average reward per farmer for labor risk and management $\frac{H}{}$	Property return produced per farmer at 1913 prices $\frac{M}{I}$ [2]	Average reward per farmer for labor at 1913 prices J [2]
1909	$316	$311	$332	$326
1910	325	462	332	472
1911	331	392	337	398
1912	336	372	338	374
1913	353	444	353	444
1914	363	459	358	454
1915	376	495	366	484
1916	410	586	373	534
1917	444	903	346	705
1918	499	1,278	322	826
1919	614	1,456	351	833
1920	795	465	374	219

[1] Much of this does not go to farmers but is paid to nonfarmer landlords and to mortgage holders.
[2] See Table D–8.

Digitized by Google

Table D–10, on page 56, compares the average annual earnings of employees normally engaged in the main industries of this country, by years, from 1909 to 1918, by current money, and at the prices of 1913, and the relative increase in purchasing power over 1909. The earnings for agriculture are for farm hands actually employed and not for owners or tenants.

The average earnings shown represent the actual earnings of all employees who normally make their living by working in the specified industry. Since there is always considerable unemployment, these averages are somewhat lower than the amounts received by employees of average ability who worked full time throughout the year.

It will be noted from the table:

1. The average annual earnings by farm hands employed in agriculture were below that of any other industry. The earnings given include an estimate for board and lodging. These figures are based on the reports of the United States Department of Agriculture.

2. The purchasing power of average earnings in mines, factories, and banks, and in most phases of transportation, rose very materially through the past decade, but the employees of Government, public utilities, and unclassified industries were distinctly worse off in 1918 than in 1909.

3. Earnings by farm hands and their purchasing power increased more from 1909 to 1918 than did those of employees in Government, in public utilities, in the hand trades, or in unclassified industries, but increased less rapidly than did the average earnings in banking, in transportation by water or by rail, in factories, or in mining. It must be noted that average earnings are not equivalent to average wage rates. Thus the fall in average earnings in public utilities was doubtless due in part to an increase in the proportion of female employees and in Government to the large number of soldiers. Average earnings are reduced by unemployment, which does not necessarily affect average wage rates.

In Table D–11, on page 57, is summarized the averaged reward per farmer (excluding his payments for hired help but including family labor) and the average annual earnings of employees in stated industries. The table indicates that the average income received by a farmer in pay for his labor, after deducting a return of 5 per cent on his property, is far below the average earnings of employees in other industries. And many employees also have an income from property in addition to that recorded as their average annual earnings.

If we consider that the farmer could make 5 per cent on his total property by investing it elsewhere and that only the residue of his income is payment for his efforts, the following conclusions follow for the year 1913: Had the farmer gone to work as a farm laborer, his average labor income would have been $328, instead of $444, as it was. Had he worked instead in the mining industry at the average earnings of the employee in that industry, he would have received $755 or about 70 per cent more than his actual labor income.

Digitized by Google

TABLE D–10.—*The average annual earnings of employees normally engaged in the given industries.*

Denominator of earnings and calendar year.	All industries.[1]	Agriculture.[1]	Production of minerals.[2]	Manufacturing.		Transportation.				Banking.	Government.[3]	Unclassified industries.
				Factories.[2]	Hand trades.[2]	All transportation.[1]	Railways,[1] express, Pullman Co., switching and terminal company.	Street railways,[1] electric light and power, telegraphs, and telephones.	Transportation by water.[2]			
Current money:												
1909	$622	$302	$590	$571	$699	$657	$651	$623	$773	$770	$739	$716
1910	656	301	645	618	681	688	690	638	788	797	763	743
1911	648	317	647	610	657	697	705	641	773	843	778	715
1912	692	319	685	655	714	731	747	652	808	887	798	772
1913	723	328	755	705	748	762	782	678	825	930	823	779
1914	674	321	650	617	640	721	723	688	807	921	842	768
1915	708	330	655	653	693	727	728	666	880	1,017	861	779
1916	843	357	815	872	840	842	849	732	1,081	1,170	891	866
1917	957	463	1,025	1,022	945	1,017	1,063	790	1,306	1,238	940	909
1918	1,094	590	1,280	1,147	1,194	1,282	1,394	878	1,532	1,461	895	1,055
Value, at prices of 1913:												
1909	656	316	618	599	732	688	682	653	810	806	774	750
1910	671	308	660	632	696	703	705	653	806	815	780	759
1911	659	322	655	620	667	709	716	652	785	857	791	727
1912	696	321	689	660	719	736	751	656	813	892	803	777
1913	723	328	755	705	748	762	782	678	825	930	823	779
1914	668	318	643	611	634	714	716	676	799	912	834	760
1915	688	320	636	634	713	706	707	647	854	967	836	757
1916	766	325	742	793	763	765	772	665	983	1,064	810	788
1917	742	359	796	793	732	789	824	613	1,012	960	729	705
1918	693	373	808	725	756	811	882	556	969	925	566	668
Indices of the purchasing power of annual earnings, base, 1913:												
1909	90.7	96.3	81.9	85.0	97.9	90.3	87.2	96.3	98.2	86.7	94.0	96.3
1910	92.8	93.9	87.4	89.6	93.0	92.3	90.2	96.3	97.7	87.6	94.8	97.4
1911	91.1	98.2	86.8	87.9	89.2	93.0	91.6	96.2	95.2	92.2	96.1	93.3
1912	96.3	97.9	91.3	93.6	96.1	96.6	96.0	96.8	98.5	95.9	97.6	99.7
1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1914	92.4	97.0	85.2	86.7	84.8	93.7	91.6	99.7	96.8	98.1	101.3	97.6
1915	95.2	97.6	84.2	89.9	95.3	92.7	90.4	95.4	103.5	106.1	101.6	97.2
1916	105.9	99.1	98.3	112.5	102.0	100.4	98.7	98.1	119.2	114.4	98.4	101.2
1917	102.6	109.5	105.4	112.5	97.9	103.5	105.4	90.4	122.7	103.2	88.6	90.5
1918	95.9	113.7	107.0	102.8	101.1	106.4	112.8	82.0	117.5	99.5	68.8	85.8

[1] Includes small amounts paid for pensions and compensation for injuries. [2] Includes payments for work done by contract. [3] Includes subsistence, but not pensions.

Digitized by Google

TABLE D–11.—*Average annual reward of farmers engaged in agriculture (exclusive of hired help), compared with the average annual earnings per employee in stated industries, for continental United States, 1909–1918, at current money rates, and at prices of 1913.*

I. AT CURRENT MONEY RATES.

Year.	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Average return to property produced per farmer [1]	$316	$325	$331	$336	$353	$363	$376	$410	$444	$499	$614	$795
Average reward per farmer for labor, risk, and management	311	462	392	372	444	459	495	586	903	1,278	1,466	465
Average yearly earnings by employees in mining industry	590	645	647	685	755	650	655	815	1,025	1,280	.....	.....
Average yearly earnings by factory employees	571	618	610	655	705	617	653	872	1,022	1,147	.....	.....
Average yearly earnings of employees in railway transportation	651	690	705	747	782	723	728	849	1,063	1,394	.....	.....
Average yearly earnings of employees in water transportation	773	788	773	808	825	807	880	1,081	1,306	1,532	.....	.....
Average yearly earnings of banking employees	770	797	843	887	930	921	1,017	1,170	1,288	1,461	.....	.....
Average yearly earnings of Government employees	737	763	778	798	823	842	861	891	940	895	.....	.....
Earnings of employees in all industries, including hired help on farms	626	656	648	692	723	674	708	843	957	1,094	.....	.....

II. AT PRICES OF 1913.

Year.	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Average return to property produced per farmer [1]	$332	$332	$337	$338	$353	$358	$366	$373	$346	$322	$351	$374
Average reward per farmer for labor, risk, and management	326	472	398	374	444	454	484	534	705	826	833	219
Average yearly earnings by employees in mining industry	618	660	655	689	755	643	636	742	796	808	.....	.....
Average yearly earnings by factory employees	599	632	620	660	705	611	634	793	793	725	.....	.....
Average yearly earnings of employees in rail transportation	682	705	716	751	782	716	707	772	824	882	.....	.....
Average yearly earnings of employees in water transportation	810	806	785	813	825	799	854	983	1,012	969	.....	.....
Average yearly earnings of banking employees	806	815	857	892	930	912	987	1,064	960	925	.....	.....
Average yearly earnings of Government employees	774	780	791	803	823	834	836	810	729	566	.....	.....
Earnings of employees in all industries, including hired help on farms	656	671	659	696	723	668	688	766	742	693	.....	.....

[1] This goes to farm owners (whether farmers or not) and to mortgage holders.

Let us next see how matters stood in 1918. The farmer that year had an income of $1,278 resulting from his labor, risks, and management. Had he worked in the mining industry for the average earnings of the employees in that industry, he would have received a wage of $1,280 or almost exactly the amount of his actual earnings. Had he worked as an employee in the railway or banking field, he would have made materially more for his labor than he did on the farm, but he would have been worse paid had he received the average earnings of those employed in factories, in public utilities (see Table D–10), in Government, or in unclassified industries.

Wages and incomes in agriculture have been below those in other industries, and hence the greater increase in the quantity output of other industries as compared with agriculture.

Digitized by Google

CHAPTER V.

BREAK IN PRICES IN DIFFERENT COUNTRIES AND INDUSTRIES.

The crisis through which the country has just passed, the principal phenomena of which was a perpendicular break in prices was not confined to this country, The world-wide character of the crisis and of the break in prices which accompanied it is indicated by Table E–1, which follows:

TABLE E–1.—*Index numbers of wholesale prices (all commodities) in 11 countries.*

[1913=100.]

Date.	Japan, Bank of Japan, for Tokyo (56 commodities.)[1]	United Kingdom, London Economist (44 commodities).[2]	France, Bulletin de la Statistique générale (45 commodities).[3]	Italy, Prof. Bachi (38 commodities until 1920, 76 thereafter).[3]	United States, Bureau of Labor Statistics (315 quotations).[1]	Germany, Frankfurter-Zeitung (77 commodities).[4]	India, Calcutta department of statistics (75 commodities).[3]	Canada, department of labor (277 quotations).[5]	Sweden Svensk Handeestidning (47 quotations).[5]	Netherlands, Central bureau voor de Statistiek (49 commodities).	Australia Commonwealth, bureau of census and labor statistics (92 commodities).
1913	100	100	100	100	100	.....	.....	100	[6] 100	100	.....
1914	96	99	101	95	100	[7] 100	[8] 100	101	116	106	[9] 100
1915	97	123	137	133	101	.....	.....	110	145	149	141
1916	117	160	187	202	124	.....	.....	135	185	233	132
1917	147	204	262	299	176	.....	.....	177	244	298	[10] 155
1918	192	225	339	409	196	.....	.....	206	339	398	170
1919	236	235	357	364	212	.....	.....	217	330	306	180
1920	250	283	510	624	243	1, 522	204	246	347	.....	218
1919.											
January	214	217	348	325	203	.....	.....	211	369	.....	171
February	213	216	340	321	197	.....	.....	206	358	.....	167
March	206	212	337	325	201	.....	.....	205	354	.....	168
April	207	214	332	332	203	.....	.....	206	339	.....	171
May	215	222	325	338	207	.....	.....	210	330	.....	172
June	228	230	330	358	207	.....	.....	210	324	.....	173
July	247	240	349	362	218	.....	.....	217	320	.....	176
August	251	242	347	369	226	.....	.....	222	321	.....	182
September	257	245	360	372	220	.....	.....	223	319	.....	185
October	271	252	382	390	223	.....	.....	221	307	.....	200
November	280	259	405	439	230	.....	.....	227	308	.....	199
December	288	273	423	457	238	.....	.....	238	317	.....	197
1920.											
January	301	288	487	508	248	.....	218	250	319	293	203
February	313	303	522	557	249	.....	209	254	342	289	206
March	321	310	554	602	253	1, 615	198	258	354	290	209
April	300	308	588	664	265	1, 604	200	261	354	296	217
May	272	304	550	660	272	1, 714	210	263	361	297	225
June	248	291	493	632	269	1, 473	206	258	366	297	233
July	239	293	496	604	262	1, 473	209	256	383	301	234
August	235	288	501	625	250	1, 582	209	244	365	289	236
September	230	284	526	655	242	1, 604	208	241	362	288	230
October	226	266	502	659	225	1, 670	206	234	346	283	215
November	221	245	460	670	207	1, 681	194	225	331	261	206
December	206	220	435	655	189	1, 626	180	214	299	233	197
1921.											
January	201	209	407	642	178	1, 083	178	208	267	213	196
February	195	192	377	613	167	1, 473	174	199	250	201	192
March	191	189	360	604	162	1, 419	.....	194	237	.....	181
April	190	183	347	584	154	1, 410	183	187	229	.....	171
May	191	182	329	547	151	1, 428	184	183	218	.....	166
June	192	.....	325	509	148	1, 376	178	179	218	.....	162
July	196	.....	332	.....	148	1, 467	183	176	211	.....	.....

[1] Average for the month.
[2] Index number of last month.
[3] End of month.
[4] Beginning of month, but not always the 1st.
[5] Middle of month.
[6] July 1, 1913, to June 30, 1914=100.
[7] Middle of 1914=100.
[8] End of July, 1914=100.
[9] July, 1914=100.
[10] Last 6 months of 1914.

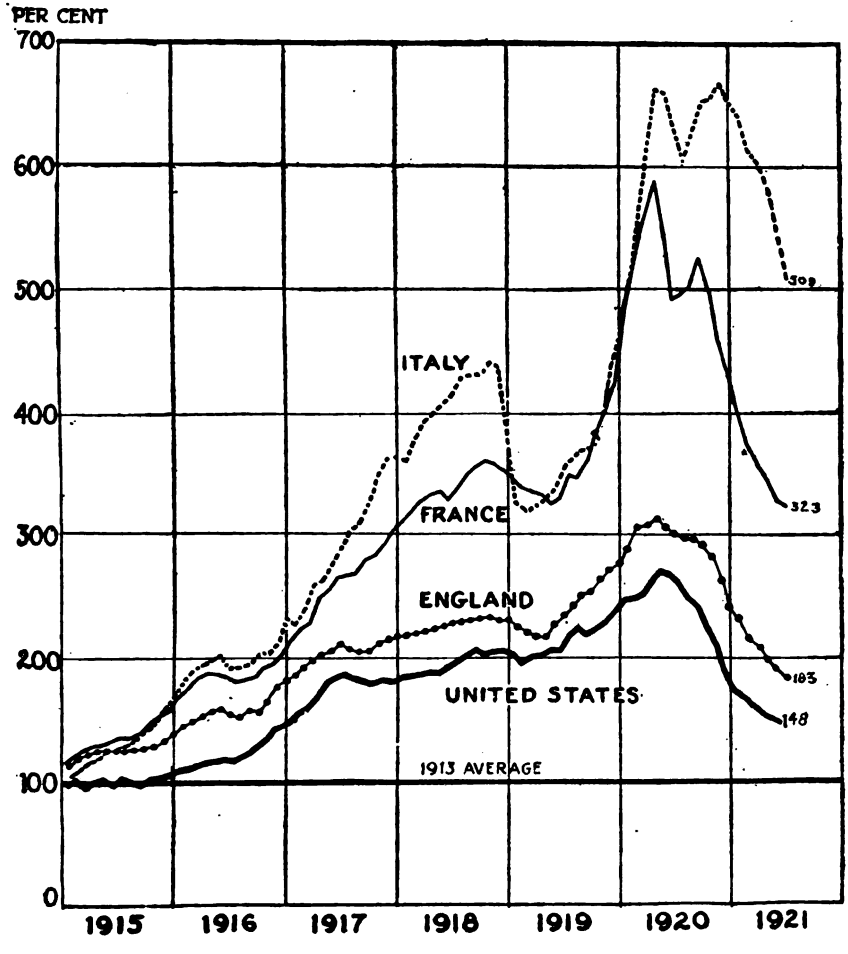
Digitized by Google

This table gives the indexes of relative wholesale prices on the 1913 base for all commodities in the United States, the United Kingdom, France, Italy, Japan, Germany, India, Canada, Sweden, Netherlands, and Australia. The crisis of 1920–21 began in Japan in the latter part of 1919 with the break in the price of silk, resulting from overproduction and the Chinese boycott of Japanese goods. The price level of all commodities began to decline in Japan in April; in the United Kingdom, in the same month; in France and Italy, in May; in the United States, Germany, India, and Canada, in June; in Sweden, in July; in the Netherlands, in August; and in Australia, in September.

The following chart shows the course of commodity prices in Italy, France, England, and the United States. The price in France and Italy rose much higher than in England and the United States, probably due to issues of paper money of depreciated gold value.

CHART E-1.—Relative wholesale commodity prices in Italy, France, England, ard the United States, 1915–1921.

NOTE.—From Department of Labor index for the United States, Statist index for England, index of the Bulletin de Statistique General for France, and the index of Prof. Bachi for Italy.



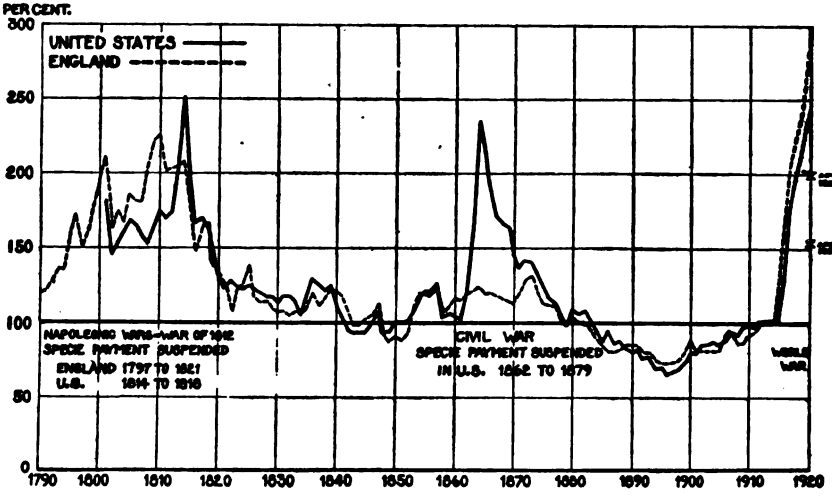
Digitized by Google

The relation between wholesale prices in the United States and England from 1800 to 1920 is shown by the following chart:

CHART E–2.—Wholesale commodity prices in the United States and England, 1790 to 1920.

[Average prices each year in currency. 1913 figures=100 per cent.]

NOTE.—Source of information: United States index compiled by Federal Reserve Bank of New York from indices prepared by A. H. Hansen (1801–1840), C. H. Juergens (1825–1863), R. P. Falkner (1840–1891), and the United States Department of Labor (1891–1920), and computed for England from indices of W. Stanley Jevons (1782–1817) and the Sauerbeck-Statist index (1818–1920).



It will be noted that prices of commodities in the United States and England have followed substantially the same course for more than 100 years with exception of the period during and immediately following the war between the States in the United States, when specie payments were suspended and the gold value of paper currency in the United States depreciated. While the general level of prices in this country began to decline in June, 1920, prices of different commodities broke in other months.

Table E–2, facing this page, tells the story of the decline of commodity prices in the United States.

The decline of prices in the United States began with the drop in the price of hogs in August, 1919, following the beginning of a decline in exports. Wholesale prices of live stock, bacon, and dressed mutton began to decline in the same month. The price of cattle began to decline in November, butter in December, 1920, and "all farm products" in May, 1920, wool and cotton in the same month, and food, wheat and wheat flour, and corn in June, 1920. As indicated elsewhere, the initial impulse of these declines was given in most cases by a fall in exports or in the case of wool by largely increased imports. As the price of farm products declined, the purchasing power of the farmers of the country, which is estimated on the whole as representing approximately 40 per cent of the purchasing power of the Nation, began to decline as wholesale prices of many other commodities began to decline, manufacture began to fall off, and unemployment became general the country over. As prices of agricultural products fell lower and lower and the purchasing power of the farmers less and less, unemployment and depression grew in the industries of the country.

Digitized by Google

PRICES OF COMMODITIES OTHER THAN FARM PRODUCTS.

The price of cloths and clothing began first to decline in April, 1920, metals and metal products and pig tin in May, lumber and building materials in June, shoes in the same month, structural steel in July, yellow-pine flooring in August, coke in September, and fuel and Bessemer pig iron in October, house furnishings in November, newsprint paper in December, 1920, coal (bituminous), cement, and zinc spelter in January, 1921, gasoline and refined petroleum in February, and anthracite coal in April, 1921.

CONSUMPTION AND PRODUCTION OF SPECIFIC COMMODITIES OTHER THAN FARM PRODUCTS.

This commission is primarily concerned with the more rapid decline of farm products; but in order to fully appreciate the force of declining prices of farm products it is necessary to consider the break in prices of commodities produced by other industries.

The production of coal reached its maximum in 1918, as indicated by Table E–6, on pages 63 and 64; but the production in 1920 was second to that of 1918 and the next largest since 1913. The production of 1919 was a little below that of 1913. Production of soft coal reached its peak in October, 1919. Production dropped more than 50 per cent in November, 1919, and increased again until October, 1920, when it reached 52,000,000 tons. This production was maintained throughout the remainder of 1920. The price of soft coal began to decline in January, 1921, and production began to decline in the same month. The monthly production the first six months of 1921 was below the monthly production for the same months in either 1919 or 1920.

The following table, E–3, shows the relative price and the relative production of coal from 1913 to 1920:

TABLE E–3.—*The relative price and the relative production of bituminous coal, 1913–1920 (calendar years).*

Year.	1913	1914	1915	1916	1917	1918	1919	1920
Price (at Pittsburgh)	100	100	100	122	208	177	187	121
Production	100	88	93	105	115	121	96	116

The total annual exports of coal were slightly higher, relatively, in 1919 and 1920 than in preceding years. The exports by years from 1913 to 1920 were as follows:

TABLE E–4.—*Exports of bituminous coal from the United States for years ending June 30, 1913 to 1920.*

Year.	1913	1914	1915	1916
Exports (long tons)	16,083,000	15,705,000	14,413,000	18,750,000
Per cent of products exported	4.00	3.68	3.82	4.74

Year.	1917	1918	1919	1920
Exports (long tons)	19,534,000	21,052,000	18,152,000	22,976,000
Per cent of products exported	4.35	4.27	3.51	5.02

Digitized by Google

COKE.

The average monthly production of coke, as indicated in Table E–6, on pages 63 and 64, reached its peak of postwar production in October, 1920. The price of coke began its decline, as indicated in Table E–2, facing page 60, in August, 1920. As the prices declined in the latter part of 1920 and the early part of 1921, the production of coke fell off with marked rapidity.

It is interesting to note that a marked rise in the price of coke (from $6 to $10.50) in April, 1920, occurred concurrently with a marked reduction in production.

PIG IRON.

The average monthly production of pig iron, as shown by Table E–6, on pages 63 and 64, was about equal in 1919 to the production in 1913. The peak of postwar pig-iron production was reached in March, 1920, but the peak of wholesale prices of pig iron was not reached until in September of that year. Production was well maintained until October, 1920, but fell off in November and continued to fall off rapidly during the remainder of that year and until June, 1921. The production of pig iron for the first four months of 1921 averaged 70 per cent of the monthly average production in 1913.

CRUDE STEEL.

The production of crude steel began to fall off in April, 1920, but did not fall off markedly until November of that year, and in April, 1921, was less than one-third of the monthly production of 1920. The production of crude steel in the United Kingdom began to decline about the same time and in about the same proportion until the coal strike practically closed British factories in April, 1921. (See Table E–6.)

The earnings of employees of the iron and steel industry are considered a fairly accurate index of the activities in that industry. The average earnings of steel employees reached their height in October, 1920, immediately preceding a drop in crude-steel production. By June of 1921 earnings of steel and iron employees had dropped to a relative of 67 as compared with a relative of 122 in the preceding October, as shown by the following table, E–5, which gives the actual and relative earnings of the iron and steel employees:

TABLE E–5.—*Average earnings of employees in the iron and steel industry.*

[Source: Bureau of Labor Statistics. The figures on earnings were obtained by dividing the total pay roll by the total number of employees as reported by the bureau. Inasmuch as the firms reporting in successive months were not always identical, some irregularities are introduced.]

	Actual earnings per one-half week.	Relative earnings (1919 monthly average =100).		Actual earnings per one-half week.	Relative earnings (1919 monthly average =100).
1918	$59.20	90	1920—Continued.		
1919	65.53	100	September	$77.54	118
1920	75.30	115	October	80.05	122
1920.			November	79.08	121
January	70.81	108	December	74.41	114
February	73.52	112	1921.		
March	77.95	119	January	75.10	115
April	73.32	112	February	64.75	99
May	74.21	113	March	61.11	93
June	76.69	117	April	53.11	81
July	71.83	110	May	48.77	74
August	74.23	113	June	43.90	67

Digitized by Google

TABLE E–6.—*Actual and relative production of coal, coke, pig iron, crude steel, copper, and zinc.*

	Production in tons.[1]									Relative production, 1913=100.								
	Coal.			Beehive coke (million short tons).[3]	Pig iron (thousand long tons).[4]	Crude steel.		Copper (pounds).[7]	Zinc (tons).[8]	Coal.			Beehive coke (million short tons).	Pig iron (thousand long tons).	Crude steel.		Copper (pounds).	Zinc (tons).
	Anthracite (million short tons).[2]	Bituminous (million short tons).[2]	Total (million short tons).[2]			United States (thousand short tons).[4,5]	United Kingdom (thousand short tons).[6]			Anthracite (million short tons).	Bituminous (million short tons).	Total (million short tons).			United States (thousand short tons).	United Kingdom (thousand short tons).		
1913	7.63	39.87	47.50	2,799	2,560	2,523	639	135,203,486	28,890	100	100	100	100	100	100	100	100	100
1914	6.76	35.22	41.98	1,945	1,921	1,902	652	95,844,766	29,420	89	88	88	69	75	75	102	71	102
1915	6.62	36.89	43.51	2,292	2,472	2,607	712	115,667,461	40,793	87	93	92	82	97	104	111	86	141
1916	6.52	41.88	48.40	2,955	3,252	3,450	766	160,654,212	55,921	85	105	102	106	127	137	120	119	193
1917	7.41	45.98	53.19	2,764	3,182	3,635	817	157,176,726	55,798	97	115	112	99	124	144	128	116	193
1918	7.35	48.28	55.63	2,540	3,209	3,588	799	159,044,466	43,160	96	121	117	91	125	142	125	118	149
1919	6.55	38.17	44.72	1,638	2,548	2,808	658	107,436,575	38,250	86	96	90	59	100	112	103	79	132
1920	7.43	46.38	53.80	1,769	3,035	[9] 3,394	755	112,130,348	39,961	97	116	113	63	118	135	118	83	138
1919.																		
January	.....	41.86	.....	2,402	3,302	4,143	805	135,733,511	.....	.....	105	.....	86	127	164	126	.....	.....
February	.....	31.57	.....	1,823	2,940	3,607	822	111,649,512	.....	.....	79	.....	65	115	143	129	.....	.....
March	.....	33.72	.....	1,768	3,090	3,550	849	102,040,460	.....	.....	85	.....	63	121	141	133	.....	.....
April	.....	32.16	.....	1,317	2,478	2,986	750	98,808,998	.....	.....	81	.....	47	97	119	117	.....	.....
May	.....	37.55	.....	1,136	2,108	2,573	846	92,652,975	.....	.....	94	.....	41	82	102	132	.....	.....
June	.....	37.06	.....	1,170	2,114	2,959	707	95,856,570	.....	.....	93	.....	42	82	117	111	.....	.....
July	7.80	42.76	.....	1,512	2,428	3,345	692	100,369,247	.....	102	107	.....	54	95	133	108	.....	.....
August	7.92	42.88	.....	1,733	2,743	3,663	531	107,994,040	.....	104	108	.....	62	107	145	83	.....	.....
September	7.33	47.40	.....	1,790	2,488	(9)	805	108,703,075	.....	96	119	.....	64	97	(9)	126	.....	.....
October	8.46	54.58	63.04	1,552	1,864	(9)	485	115,143,143	.....	111	137	133	56	73	(9)	76	.....	.....
November	7.87	20.30	28.17	1,681	2,392	(9)	778	.....	.....	103	51	59	60	93	(9)	122	.....	.....
December	8.09	36.61	44.70	1,721	2,633	(9)	775	.....	.....	106	92	94	62	103	(9)	121	.....	.....

[1] Average monthly production 1913 to 1920.
[2] Weekly Reports U. S. Geological Survey (Federal Reserve Bulletin).
[3] Federal Reserve Bulletin.
[4] Iron Age.
[5] Ingots only.
[6] London Economist.
[7] Engineering and Mining Journal represents domestic production plus imports. Total represents the crude copper content of blister copper in pounds.
[8] American Bureau of Metal Statistics.
[9] Data not collected by Iron and Steel Institute.

Digitized by Google

TABLE E-6.—*Actual and relative production of coal, coke, pig iron, crude steel, copper, and zinc*—Continued.

	Production in tons.									Relative production, 1913=100.								
	Coal.			Beehive coke (million short tons).	Pig iron (thousand long tons).	Crude steel.		Copper (pounds).	Zinc (tons).	Coal.			Beehive coke (million short tons).	Pig iron (thousand long tons).	Crude steel.		Copper (pounds).	Zinc (tons).
	Anthracite (million short tons).	Bituminous (million short tons).	Total (million short tons).			United States (thousand short tons).	United Kingdom (thousand short tons).			Anthracite (million short tons).	Bituminous (million short tons).	Total (million short tons).			United States (thousand short tons).	United Kingdom (thousand short tons).		
1920.																		
January	7.59	48.69	56.28	1,982	3,015	3,530	754	121,903,744	43,441	99	122	119	71	118	140	118	90	150
February	6.52	40.18	46.70	1,731	2,979	3,410	798	117,450,000	43,921	86	101	98	62	116	135	125	87	152
March	7.86	46.83	54.74	2,025	3,376	3,925	840	120,309,316	48,256	103	118	115	72	132	156	131	89	167
April	6.22	37.94	44.16	1,602	2,740	3,140	794	116,078,871	45,369	82	95	93	57	107	125	124	86	157
May	7.96	38.99	46.95	1,689	2,986	3,431	845	114,964,207	45,415	104	98	99	60	116	136	132	85	157
June	8.17	45.11	53.28	1,710	3,044	3,549	846	116,107,856	41,009	107	113	112	61	119	141	132	86	142
July	8.26	45.01	53.27	1,693	3,067	3,297	790	109,729,510	40,194	108	113	112	60	120	131	124	81	139
August	8.02	48.91	56.93	1,776	3,147	3,530	709	116,460,654	38,226	105	123	119	63	123	140	111	86	132
September	4.65	49.17	53.82	1,820	3,129	3,524	885	104,919,262	36,819	61	124	113	65	122	140	139	78	127
October	8.07	52.14	60.21	2,065	3,293	3,543	544	105,231,571	35,335	106	131	127	74	129	140	85	78	122
November	7.45	51.46	58.91	1,622	2,935	3,100	505	106,700,178	33,318	98	129	124	58	115	123	79	79	115
December	8.32	52.12	60.44	1,515	2,704	2,749	745	95,709,009	28,439	109	131	127	54	106	109	117	71	98
1921.																		
January	9.42	40.27	49.69	1,075	2,416	[10] 2,590	493	90,586,597	25,916	123	101	105	38	94	103	77	67	90
February	7.85	30.85	38.70	864	1,937	2,055	484	86,632,941	17,769	103	78	81	31	76	82	76	64	62
March	7.60	30.33	37.93	587	1,596	1,846	359	91,046,345	15,741	100	76	80	21	62	73	56	67	54
April	7.98	28.39	36.35	327	1,193	1,442	68	46,946,523	16,550	105	72	77	12	47	57	11	35	57
May	7.68	33.26	40.94	288	1,221	.....	.....	25,310,511	18,026	101	84	86	10	48	.....	.....	19	62
June	8.25	33.85	42.10	245	1,065	.....	.....	.....	.....	108	85	89	9	42	.....	.....	.....	.....

[10] Estimates for 1920 are based upon returns of 30 establishments where aggregate production amounts to about 85 per cent of the total output of the United States.

Digitized by Google

FABRICATED STRUCTURAL STEEL.

The tonnage of fabricated structural steel, as shown by Table E–13 on page 78, reached the peak of postwar production in February, 1920, when fabricated steel shops were operating at 95 per cent of capacity.

The output of structural steel ranged from 12 to 26.5 per cent of capacity in the first four months of 1919 on account of shutdown of war factories. Production was resumed at about half capacity in the following months and gradually increased until February, when as previously stated it reached 95 per cent of capacity. The peak of structural-steel prices had been reached in July and August of 1917, when the price index stood at 386.9 as compared with 100 in 1913. The price then fell to 201 in October and rose again to 244.4 in September of 1918. Price of structural steel sagged to 170 in April, 1919, where it remained until 1920, when the index rose to 219 in April, where it remained until June. Beginning with July, 1920, the price again began to decline and has declined continuously since. This decline was accompanied by a marked decline in production as indicated in Table E–13 on page 78.

The following table, E–7, gives the actual and relative prices of structural steel, by years, from 1913 to 1920 and by months from January, 1917, to July, 1921:

TABLE E–7.—*Actual and relative prices of structural steel.*

[1913=100.]

BY YEARS, 1913 TO 1921.

	1913	1914	1915	1916	1917	1918	1919
Actual price per pound	$0.016	$0.013	$0.015	$0.028	$0.043	$0.032	$0.028
Relative price per pound	100	83	95	177	269	202	174

BY MONTHS, 1917–1921.

	Actual.					Relative.				
	1917	1918	1919	1920	1921	1917	1918	1919	1920	1921
January	$0.035	$0.032	$0.031	$0.027	$0.028	215.6	201.3	191.9	168.8	175.0
February	.036	.032	.031	.029	.028	222.5	201.3	191.9	181.3	175.0
March	.037	.032	.030	.033	.026	233.1	201.3	186.3	206.3	162.5
April	.040	.032	.027	.035	.026	249.4	201.3	170.0	218.8	162.5
May	.045	.032	.027	.035	.026	283.8	201.3	170.0	218.8	162.5
June	.056	.032	.027	.035	.025	351.9	201.9	170.0	218.8	156.3
July	.062	.033	.027	.032	.023	386.9	204.4	170.0	200.0	146.3
August	.062	.033	.027	.031	.....	386.9	206.4	170.0	193.8	.....
September	.047	.033	.027	.032	.....	293.1	244.4	170.0	200.0	.....
October	.032	.033	.027	.032	.....	201.3	204.4	170.0	200.0	.....
November	.032	.033	.027	.031	.....	201.3	200.9	170.0	193.8	.....
December	.032	.032	.027	.028	.....	201.3	194.4	170.0	175.0	.....

Source: Bureau Labor Statistics Price Bulletins.

70678—H. Rept. 408, pt 1, 67–1——5

Digitized by Google

PETROLEUM PRODUCTS.

The production of gasoline in the postwar period, as shown by Table E–14, on page 80, did not begin to decline until January, 1921, and wholesale prices of gasoline began to decline in the following month. Kerosene reached its peak of postwar production in November, 1920 (Table E–14), and prices of refined petroleum began to decline in February, 1921. The production of lubricating oil reached its peak in the postwar period in October, 1920, and the production of gas and fuel oil in December, 1920 (Table E–14, on p. 80). The price of crude petroleum began to decline in January, 1921. Zinc production, as indicated in Table E–6, on page 63, reached its maximum production in March, 1920, while the price of zinc smelter began to fall in January.

TIN DELIVERIES.

Production of pig tin reached its peak in July, 1920, and the peak price of pig tin was reached, as shown by Table E–2, facing page 60, in April, 1920, after which both the price and the production declined rapidly.

LUMBER.

Postwar production of lumber reached its peak in May, 1920—southern pine in April and Douglas fir in May, 1920. The price of Douglas fir began to decline in June, 1920, and yellow-pine flooring in August of the same year. The tables E–8, E–9, E–10, and E–11, following, give the estimates of F. W. Dodge Co. of contracts awarded for buildings of all kinds in 25 Northeastern states east of the Mississippi River and north of the Ohio. These tables indicate that contracts for business buildings reached their peak in April, 1920; industrial buildings in March, 1920; and residential buildings in April, 1920. Since these months contracts for business, industrial, and residential buildings have constantly declined. On the other hand, contracts for educational buildings reached their peak in July, as did contracts for hospitals and institutions, public works and public utilities, and social and recreational buildings. Contracts for public buildings and religious buildings reached the maximum in August, 1920. Contracts for educational buildings, hospitals, public buildings, public works and public utilities, social and recreational buildings, and religious and memorial buildings have shown a marked tendency to increase in 1921, after a period of considerable decline in the last half of 1920. In other words, contracts for buildings for business, industrial, and residential purposes have declined rapidly as industrial depression has increased, but while industrial depression temporarily diminished contracts for public buildings of various kinds, contracts for these buildings have shown a marked tendency to increase in recent months.

Digitized by Google

TABLE E–8.—*Building contracts awarded.*[1]

NUMERICAL DATA.

[Base year in bold-faced type.]

Year and month.	Business buildings.			Industrial buildings.			Residential buildings.			Educational buildings.			Hospitals and institutions.		
	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)
1919 monthly average	**1,092**	**9,240**	**$33,806**	**636**	**12,772**	**$42,744**	**3,999**	**20,157**	**$70,767**	**166**	**1,915**	**$9,960**	**49**	**368**	**$3,266**
1920 monthly average.	895	6,879	26,638	511	10,652	49,080	2,414	11,460	47,177	170	2,190	14,358	49	523	3,962
1920.															
January	805	7,325	34,117	599	18,879	88,991	1,942	11,599	47,055	80	2,320	10,440	27	281	1,868
February	776	8,234	42,035	540	14,352	65,680	1,618	9,511	38,307	86	1,447	8,214	21	281	2,341
March	1,147	10,182	50,902	665	22,796	96,093	2,640	15,945	62,575	158	2,976	17,939	42	653	2,973
April	1,245	10,816	54,722	663	13,473	55,121	3,711	20,872	90,933	184	3,039	18,946	47	824	4,222
May	1,117	7,908	40,201	617	11,111	47,511	3,218	17,104	65,362	234	2,719	17,047	50	821	4,712
June	1,022	9,499	47,529	529	10,639	45,275	2,691	10,891	44,330	274	3,061	19,674	61	466	3,011
July	907	7,325	36,128	465	6,768	36,458	2,334	8,607	40,811	284	2,507	19,806	68	531	8,200
August	924	5,005	28,985	493	6,972	31,733	2,384	10,803	41,627	270	2,832	18,972	58	476	4,850
September	799	5,371	26,944	427	8,273	40,440	2,410	8,222	36,015	175	1,834	12,762	57	484	3,166
October	817	4,823	23,804	443	5,392	26,932	2,206	11,173	43,433	118	1,779	14,258	60	742	6,186
November	683	3,611	20,218	407	5,264	33,330	2,035	7,264	32,158	79	1,045	6,950	54	417	2,573
December	510	2,336	14,068	289	3,911	21,399	1,777	5,534	23,516	85	719	7,288	42	302	3,441
1921.															
January	506	3,262	20,528	250	2,359	15,437	1,573	6,724	30,732	73	1,257	6,905	31	782	4,779
February	549	3,277	17,020	197	1,786	9,037	2,085	8,319	36,294	81	1,625	8,647	16	94	1,146
March	870	4,424	22,776	296	2,341	10,640	3,833	14,382	60,701	160	2,969	19,031	35	587	2,698
April	880	5,084	29,176	288	3,497	12,919	4,556	17,948	75,006	228	3,328	22,640	54	660	4,482
May	896	5,632	24,494	275	3,543	20,404	4,683	18,804	82,982	287	4,668	24,462	55	645	3,288
June	952	5,645	24,494	244	3,581	18,502	4,758	18,227	75,175	355	3,731	23,441	79	1,507	12,762

[1] Covers territory of 25 northeastern states, east of the Mississippi and north of the Ohio Rivers. Supplied by the F. W. Dodge Co.

Digitized by Google

TABLE E–9.—*Building contracts awarded.*[1]

INDEX NUMBERS.

[Base year in bold-faced type.]

Year and month.	Business buildings.			Industrial buildings.			Residential buildings.			Educational buildings.			Hospitals and institutions.		
	Number of projects.	Square feet.	Value.	Number of projects.	Square feet.	Value.	Number of projects.	Square feet.	Value.	Number of projects.	Square feet.	Value.	Number of projects.	Square feet.	Value.
	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.
1919 monthly average	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
1920 monthly average.	81	74	79	80	83	115	60	57	67	102	114	144	100	142	121
1920.															
January	74	79	101	94	148	208	49	58	66	48	121	105	55	76	57
February	71	89	124	85	112	154	40	47	54	52	76	82	43	76	72
March	105	110	151	105	178	225	66	79	88	95	155	180	88	177	91
April	114	117	162	104	105	129	93	104	128	111	159	190	96	224	129
May	102	86	119	97	87	111	80	85	92	141	142	171	102	223	144
June	94	103	141	83	83	106	67	54	63	165	160	198	124	127	92
July	88	79	107	73	53	85	58	43	58	171	131	199	139	144	251
August	85	54	86	78	55	74	60	54	59	163	148	190	118	129	149
September	73	58	80	67	65	95	60	41	51	105	96	128	116	131	97
October	75	52	70	70	42	63	55	55	61	71	93	143	122	201	189
November	63	39	60	64	41	78	51	36	45	48	55	70	110	113	79
December	47	25	42	45	31	50	44	27	33	51	38	73	86	82	105
1921.															
January	46	35	61	39	18	36	39	33	43	44	66	69	63	212	146
February	50	35	50	31	14	21	52	41	51	49	85	87	33	25	35
March	80	48	67	47	18	25	96	71	86	96	155	191	71	159	83
April	81	55	86	45	27	30	114	89	106	137	174	227	110	179	137
May	82	61	87	43	28	48	117	93	117	173	244	246	112	175	101
June	87	61	75	38	23	43	119	90	106	214	195	235	161	410	391

[1] Covers territory of 25 northeastern states, east of the Mississippi and north of the Ohio Rivers. Supplied by the F.W. Dodge Co. From the Survey of Current Business, Bureau of Census, July 1, 1921, pp. 36–39.

Digitized by Google

TABLE E–10.—*Building contracts awarded.*[1]

NUMERICAL DATA.

[Base year in bold-faced type.]

Year and month.	Public buildings.			Public works and public utilities.		Social and recreational buildings.			Religious and memorial buildings.			Grand total.[2]		
	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)	Number of projects.	Square feet. (000 omitted.)	Value. (000 omitted.)
1919 monthly average	**47**	**172**	**$1,119**	**654**	**$41,834**	**111**	**1,365**	**$6,964**	**91**	**444**	**$3,127**	**6,862**	**46,333**	**$214,990**
1920 monthly average	45	236	2,218	534	47,195	109	1,030	7,594	79	422	3,446	4,821	33,383	211,102
1920.														
January	31	130	782	295	33,018	76	1,177	5,609	30	241	1,484	3,906	41,952	226,116
February	29	186	4,060	336	35,124	66	832	4,223	24	71	615	3,504	34,914	200,757
March	32	126	967	517	58,412	111	1,436	8,623	49	381	2,813	5,367	54,495	302,133
April	40	136	1,323	626	63,873	135	1,417	11,198	75	385	3,695	6,742	50,962	304,974
May	55	107	1,476	654	56,086	146	1,075	9,531	94	461	4,579	6,193	41,306	246,935
June	61	751	8,067	670	77,805	144	1,191	8,327	108	481	5,040	5,584	36,979	260,111
July	58	356	1,637	724	46,367	145	1,004	8,572	119	647	4,478	5,131	27,745	204,498
August	67	148	1,819	674	60,459	122	1,484	9,363	123	500	4,309	5,129	28,220	202,652
September	46	365	2,751	620	43,392	113	734	6,394	91	549	4,389	4,758	25,832	178,179
October	42	315	1,433	565	47,900	86	661	8,108	108	584	5,041	4,449	25,469	177,758
November	32	87	895	369	21,848	83	785	6,339	82	329	2,774	3,339	18,802	128,966
December	43	124	1,418	356	21,972	81	564	4,310	48	436	2,137	3,249	13,926	100,145
1921.														
January	27	113	1,079	237	24,186	69	495	4,274	56	367	2,261	2,834	15,359	111,606
February	23	324	2,482	264	13,547	91	979	5,328	48	368	2,253	3,361	16,772	100,677
March	32	202	2,271	558	33,958	124	1,368	9,461	67	430	2,487	5,961	26,703	164,092
April	47	404	2,781	812	48,043	173	2,723	19,533	129	827	6,138	7,176	34,471	220,886
May	51	273	1,846	977	64,999	164	1,451	9,975	135	715	4,497	7,530	35,731	242,094
June	61	152	1,402	1,130	52,967	166	1,710	10,202	155	1,161	7,075	7,919	35,738	227,711

[1] Covers territory of 25 northeastern states, east of the Mississippi and north of the Ohio Rivers. Supplied by the F. W. Dodge Co.
[2] Grand total includes military and naval buildings and miscellaneous, in addition to the groups listed.

Digitized by Google

TABLE E-11.—*Building contracts awarded.*[1]

INDEX NUMBERS.

[Base year in bold-face type.]

Year and month.	Public buildings.			Public works and public utilities.		Social and recreational buildings.			Religious and memorial buildings.			Grand total.[2]		
	Number of projects.	Square feet.	Value.	Number of projects.	Value.	Number of projects.	Square feet.	Value.	Number of projects.	Square feet.	Value.	Number of projects.	Square feet.	Value.
	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.	Relative to 1919.
1919 monthly average	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1920 monthly average	96	137	198	82	113	98	81	109	87	95	110	70	72	98
1920.														
January	66	76	70	45	79	68	93	81	43	54	47	57	91	105
February	62	108	363	51	84	59	66	61	26	16	20	51	75	93
March	68	73	86	79	140	100	114	124	54	86	90	78	118	141
April	85	79	118	96	153	122	112	161	82	87	118	98	110	142
May	117	62	132	100	134	132	85	137	103	104	146	90	89	115
June	130	436	723	102	186	130	94	120	113	108	161	81	80	121
July	123	207	146	111	111	131	79	123	131	145	143	75	60	95
August	143	86	163	103	145	110	117	134	135	112	138	75	61	94
September	98	212	246	95	104	102	58	92	100	124	140	69	56	88
October	89	183	128	86	115	77	52	116	113	131	161	65	55	88
November	68	50	80	56	52	75	62	98	90	74	89	56	41	60
December	91	72	127	54	53	73	45	62	53	98	68	47	30	47
1921.														
January	57	66	96	36	58	62	39	61	62	83	72	41	33	52
February	49	188	222	40	44	82	77	77	53	83	72	49	36	47
March	68	117	203	85	81	112	108	136	74	97	80	87	58	76
April	100	234	249	124	115	156	215	280	142	186	196	105	74	103
May	109	158	165	149	155	148	115	143	148	161	144	110	77	113
June	130	88	125	173	127	150	136	146	170	261	226	115	77	106

[1] Covers territory of 25 northeastern States, east of the Mississippi and north of the Ohio Rivers. Supplied by the F. W. Dodge Co.
[2] Grand total includes military and naval buildings and miscellaneous, in addition to the groups listed.

Digitized by Google

STOCK OF NEWSPRINT PAPER.

Stocks of newsprint paper (see Table E–14 on p. 80) reached their peak in February, shipments in April, and production in March of 1920. Prices of newsprint paper reached their peak in March of 1920, to rise again to a higher peak in November of that year. Stocks began to accumulate in the early part of 1921. The production of wood pulp reached its peak in May of 1920 and stocks in the month following, though stocks began to accumulate in the early months of 1921.

SHOES.

Eight New England shoe factories reached their maximum output in March of 1920 (see Table E–13, p. 78), with a sharp decline in August of 1920. After nine months of low output production increased in June of 1921, but not to the output of June of either 1919 or 1920.

The average wholesale price of Goodyear welt vici calf shoes reached its peak in March of 1920 at a point of 308, as compared with 100 in 1913. This price was maintained for three months, and the first decline was in June of 1920, three months after the peak of production had been passed.

Chart E–3, on page 72, reflects the relative wholesale price of shoes of this grade, by months, from 1913 to 1921 in their relation to the relative wholesale prices of hides, leathers, all commodities, and farm products.

The price relation of hides, leather, and shoes is shown in Chart E–4, on page 73, which gives the same data by years, on the same base, from 1890 to 1920.

It will be noted that shoes were above the relative wholesale price of hides, of leather, of farm products, and of all commodities from 1890 to 1896. From 1896 to 1909 the prices of these classes of commodities stayed on relatively close relations to each other. In 1919, however, the price of shoes began to rise and in 1920 was over 100 points above hides, leather, and all commodities and farm products.

EMPLOYMENT AND LIVING COSTS.

A general guide as to production and consumption is reflected in the fact that the number of employees in representative manufacturing establishments in New York State reached its height in March of 1920, two months before the general price level began to decline (see Table E–13, p. 78).

Chart E–5, on page 74, shows the relation in recent months between prices of certain groups of commodities that play a large part in the cost of living.

Chart E–6, on page 75, shows that the cost of living (July, 1914 = 100) caught up with the general level of all wholesale prices, for the first time, in January of 1921.

As a general guide to the quantity of our exports, the tonnage of vessels cleared (see Table E–15, p. 81) reached its peak in August of 1920, but from April of 1919 to April of 1920 the tonnage cleared exceeded the average tonnage cleared in 1913.

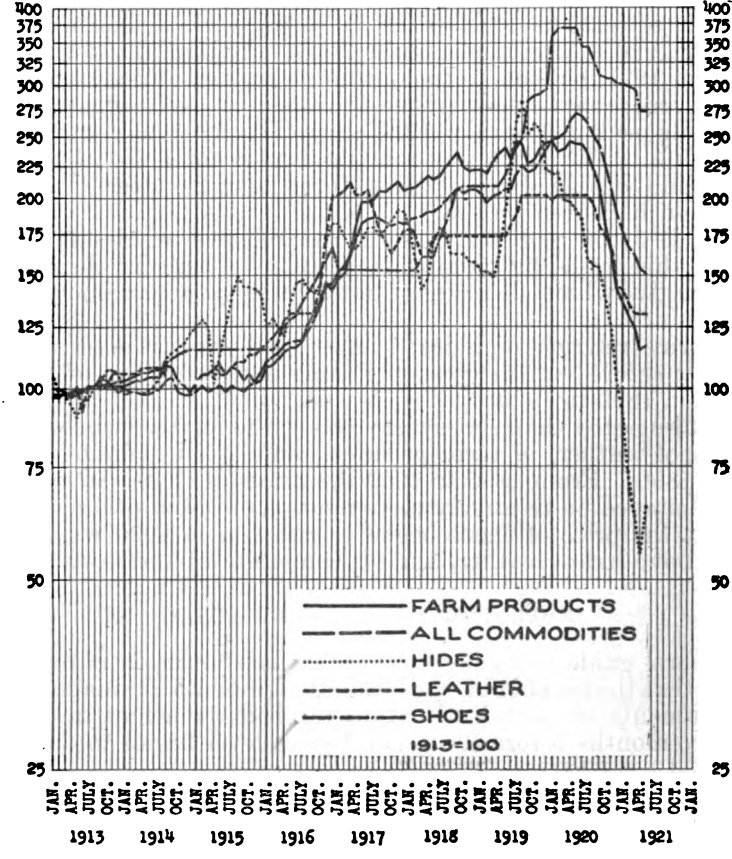
The total monthly value of our exports (see Table E–16, p. 82) had reached their height in June of 1919. The value of our exports for

Digitized by Google

CHART E-3.

THE RELATIVE WHOLESALE PRICES BY MONTHS, 1913-1921

FARM PRODUCTS, ALL COMMODITIES, HIDES, LEATHER, AND SHOES

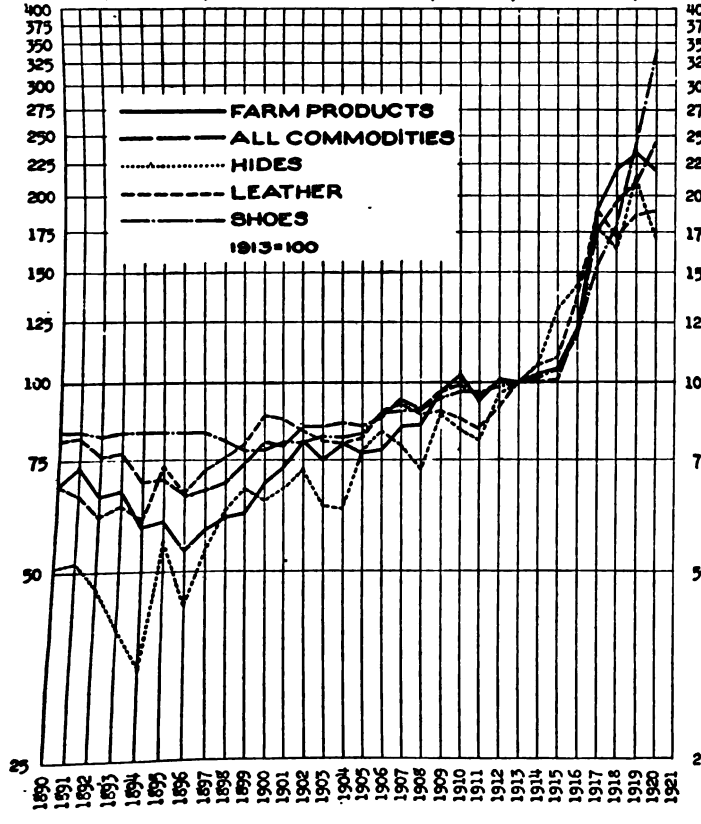


Digitized by Google

CHART E-4.

THE RELATIVE WHOLESALE PRICES BY YEARS, 1890-1920

FARM PRODUCTS, ALL COMMODITIES, HIDES, LEATHER, AND SHOES

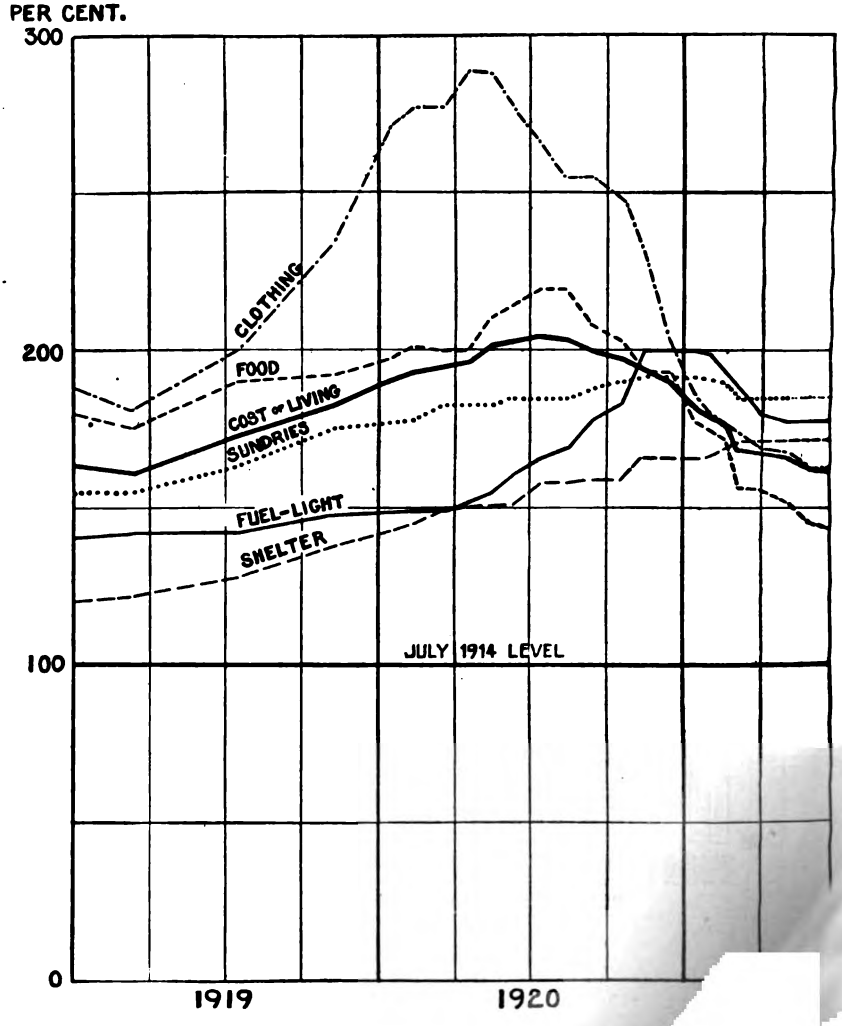


Digitized by Google

CHART E–5.—The relative prices of different groups of commodities in the cost of living on the basis of July, 1914.

[July, 1914=100.]

(Source of information: National Industrial Conference Board.)

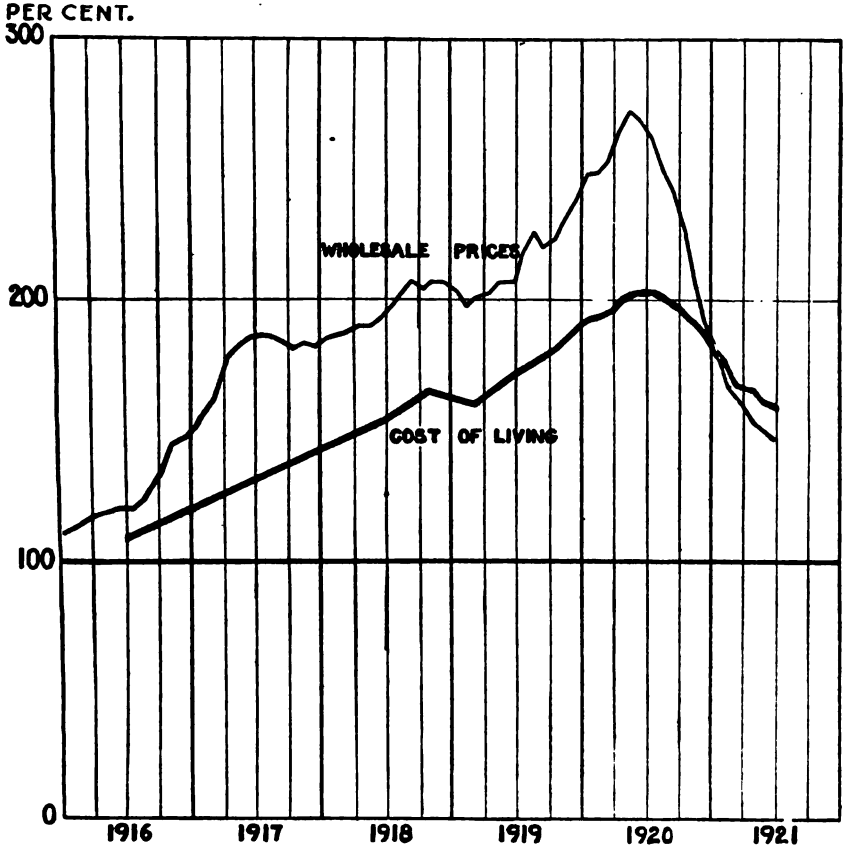


Digitized by Google

CHART E–6.—The relative wholesale prices of all commodities and the relative wholesale prices of the main commodities entering into the cost of living.

[July, 1914=100.]

NOTE.—Source of information: Monthly Labor Review and National Industrial Conference Board.



Digitized by Google

the year 1920 were greater than for the year 1919; hence the exports of March, 1920, may be taken as the high point in the value of our export trade. On a gold parity basis the high tide of the values of exports from the United Kingdom was reached in July of 1920; of France in August, 1920; of Italy in June of 1920; and of Japan in December of 1919, with another rise, though not so high, in April of 1920.

The value of our imports was greater in 1920 than in 1919, reaching their high point in June of 1920.

TABLE E–12.—*Exports of the United States, United Kingdom, France, Italy, and Japan, 1919–1921.*

[In millions of dollars at gold parity.]

Year.	United States.	United Kingdom.[1]	France.[2]	Italy.	Japan.
1919.					
January	623	253	67	44	56
February	585	253	68	51	62
March	603	302	93	60	67
April	715	350	82	59	71
May	604	369	98	57	78
June	928	372	110	79	75
July	569	375	119	72	90
August	646	438	.....	83	98
September	595	400	134	110	86
October	631	480	139	124	112
November	741	523	134	113	109
December	682	570	.....	147	138
1920.					
January	783	528	139	83	88
February	646	636	255	103	87
March	820	616	259	115	96
April	685	679	266	131	109
May	746	664	233	128	96
June	631	664	349	145	91
July	651	756	.....	100	77
August	579	624	464	103	87
September	605	637	415	110	77
October	752	625	450	.....	67
November	677	645	363	.....	52
December	721	532	321	.....	42
1921.					
January	655	451	363	.....	.....

[1] Includes reexports.

[2] French foreign trade figures for 1919 and January through June, 1920, are expressed in 1918 value units; August through December, 1920 figures are calculated at 1919 rates. A change in the methods of calculating the values for July, August, and December, 1919, and for July, 1920, makes them incomparable with other months.

BUSINESS FAILURES.

The number of business failures reached their lowest actual limit in July of 1919, and reached their height in January of 1921. These actual numbers (see Table E–13, p. 78) are misleading because seasonal. In chart E–7, p. 77 the seasonal variations are ironed out. Since 1866 an average of about 1 per cent of the firms in business have failed each year. In 1915 failures were above normal, then they declined but began to increase with 1920, and have reached normal in 1921.

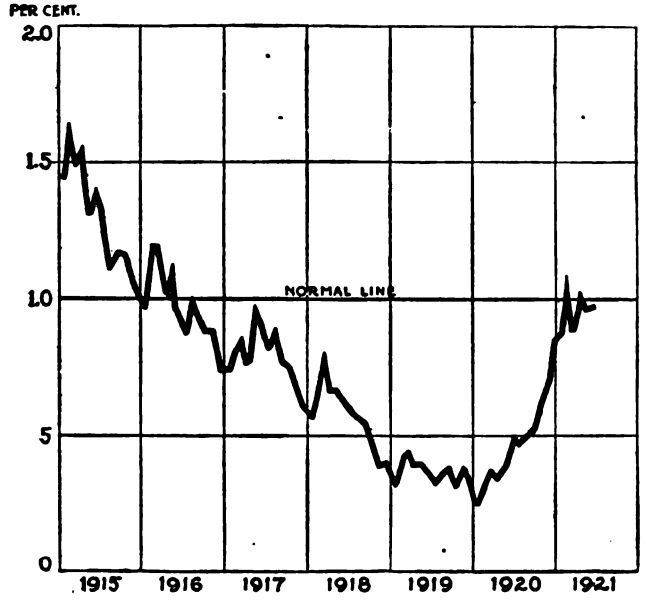
As a rule, a drop in price of commodities other than agricultural products was followed by a decline in production or consumption. The production of agricultural products, however, was for the most part fixed before declines in price began.

Digitized by Google

Employment, as indicated by Table E–13, page 78, reached its maximum in the number of weeks work in March, 1920, two months before the break in the general price level. The decline in industrial production and the decline in unemployment resulted in declining consumption in cities and in industries, and this decline in consumption in most cases, took place before the break in prices in May, 1920. However important and effective economic factors may have been in influencing a decline in prices, it would be unsound to assume that economic factors were the only influences affecting the decline. Psychological factors, while exceedingly difficult to measure, are nevertheless of impelling force in times of price declines. After a period of prosperity and rise in prices there occurs a curious change in the public attitude

CHART E–7.—Percentage of firms failing to the number in business in terms of the annual rate, seasonal variation allowed for.

NOTE.—From the Monthly Review of the Federal Reserve Bank in New York, Aug. 1, 1921, p. 11.



toward prices and the purchase of goods. When prices are rising, people buy freely and anticipate future needs in order to take advantage of the rise in prices, but when prices fall, people refrain from buying in order to take advantage of the drop in prices. Thus once a decline in prices begins, the buyers' strike promptly develops and this buyers' strike extends not only to the consumer but to retailers, wholesalers, and manufacturers. The strike of the buying public soon finds a reflection in decreased production and increased unemployment which further decrease public purchasing power. The buyers' strike, which was at first a matter of choice on the part of the public, soon became a matter of necessity. High prices and over expansion of stocks and of credit sow the seeds of their own destruction.

Digitized by Google

TABLE E–13.—*Business conditions other than agricultural.*

Date.	Tin deliveries (long tons).[1]	Index of employment in New York State (number employed in 1914 =100).[2]	Number of business failures in United States.[3]	Sales and selling value of stocks of 56 department stores in second Federal reserve district.[4]				Receipts and shipments of lumber, Chicago and St. Louis.[5]				Fabricated structural steel contracted for throughout country.[6]		Tonnage of vessels cleared in foreign trade.[6]		Report of 8 manufacturers on New England shoe production (number of pairs).[6]
				Net sales (000 omitted).	Index (average sales 1919 =100).	Stocks on hand close of month (000 omitted).	Index (1919=100).	Receipts.		Shipment.		Tonnage.	Per cent of shops' capacity.	Net tonnage.	Index (1911–1913 =100).	
								M feet.	Index (1911–1913 =100).	M feet.	Index (1911–1913 =100).					
1919.																
January	1,850	113	673	$18,657	76.9	$65,712	271.1	134,604	63	47,922	62	21,600	12.0	3,062,514	78	.....
February	2,450	112	602	16,332	67.3	68,512	282.6	97,511	49	45,585	64	22,500	12.5	2,933,557	75	.....
March	2,070	111	629	20,064	82.7	73,277	302.3	124,040	59	46,902	61	32,300	17.5	2,898,587	75	.....
April	[7] 36	111	543	24,430	100.8	73,919	304.9	144,253	68	59,055	77	48,100	26.5	2,802,973	98	1,307,193
May	[7] 20	110	531	23,760	98.0	71,778	296.1	162,365	77	66,001	86	88,200	49.0	4,894,031	126	1,442,559
June	[7] 68	110	485	22,976	94.8	70,196	289.6	184,862	87	80,762	105	117,000	65.0	4,850,821	125	1,190,305
July	[7] 132	113	452	17,815	73.5	73,558	303.5	200,148	94	90,134	118	133,200	74.0	5,282,818	136	1,260,329
August	4,345	115	468	17,027	70.2	83,461	344.3	170,385	80	87,953	115	141,000	78.5	5,755,067	148	1,530,823
September	4,825	116	473	22,973	94.7	94,420	389.5	205,909	97	93,120	121	141,000	78.5	5,109,156	131	1,588,156
October	2,875	115	463	31,459	129.8	100,759	415.7	208,638	98	95,674	125	139,500	77.5	4,719,338	121	1,718,798
November	6,665	118	551	30,914	127.5	104,933	432.9	176,972	83	70,175	92	124,200	69.0	4,162,360	107	1,439,446
December	6,965	122	581	44,422	183.2	92,695	382.4	226,617	107	79,553	104	153,000	85.0	3,777,598	97	1,520,489
1920.																
January	3,910	123	569	26,873	110.8	94,351	389.3	403,604	87	219,783	87	135,000	75.0	3,883,183	100	1,642,941
February	5,200	122	492	21,015	86.7	103,959	428.9	421,692	94	224,286	91	171,000	95.9	3,300,619	92	1,228,041
March	5,130	125	566	29,685	122.4	115,717	477.4	500,230	108	296,047	117	150,400	83.5	3,877,254	100	1,728,720
April	3,305	124	504	28,374	117.0	117,241	483.7	236,975	51	131,933	52	122,250	68.0	4,464,672	115	1,625,478
May	3,550	122	547	31,437	129.7	110,463	455.7	313,447	67	195,965	77	110,700	61.5	5,166,037	133	1,576,814
June	6,500	121	674	29,511	121.7	105,724	436.2	393,738	85	212,339	84	90,400	50.0	6,341,187	163	1,471,305
July	5,530	121	681	21,451	88.5	104,631	431.7	399,615	86	184,767	73	90,400	50.0	6,918,590	189	1,219,137
August	3,745	118	673	19,166	79.0	111,076	458.3	370,352	80	220,368	87	72,000	40.0	7,545,869	184	1,365,454
September	4,860	117	677	24,764	102.1	119,484	493.0	375,456	81	242,857	96	77,400	43.0	6,935,130	170	928,698
October	3,415	115	923	32,805	135.3	120,370	496.6	398,333	86	220,116	87	45,600	25.5	7,256,824	177	634,913
November	3,395	108	1,050	34,635	142.9	114,525	472.5	342,971	74	190,282	75	49,200	27.5	6,170,661	151	519,318
December	2,580	100	1,525	44,895	185.2	91,994	379.5	351,695	76	192,072	76	47,000	26.0	5,735,031	140	566,619

Digitized by Google

1921.																
January	1,555	93	1,895	25,649	105.8	80,834	383.5	263,001	57	165,308	65	32,000	18.0	4,645,818	114	710,710
February	1,585	94	1,641	21,413	88.3	84,952	350.5	269,632	62	169,843	72	25,600	14.0	4,166,603	109	823,529
March	1,683	95	1,336	28,429	117.3	91,339	376.8	349,426	75	215,760	85	52,300	29.0	4,494,152	110	885,829
April	1,590	94	1,487	28,037	115.6	93,500	385.7	345,798	74	213,359	84	55,800	31.0	5,009,543	122	738,564
May	1,225	92	1,356	27,496	113.4	91,735	378.5	354,992	76	242,452	95	50,800	28.0	5,024,222	123	829,324
June	1,590	90	1,320	27,403	113.0	86,644	357.5	372,453	80	253,848	100	66,900	37.0	6,153,131	150	1,025,577
July	1,525	.....	1,444	.....	.....	.....	.....	328,129	71	216,908	85	.....	.....	.....	.....	.....

[1] New York Metal Exchange.
[2] Employment in representative manufacturing establishments in New York State—New York State Industrial Commission.
[3] Dun's Review.
[4] Reports to Federal Reserve Bank of New York.
[5] Federal Reserve Bulletin.
[6] Federal Reserve Bank of Boston.
[7] Import embargo.

Digitized by Google

TABLE E–14.—*Production of manufactures (in United States unless otherwise indicated).*

[Source: Harvard Review of Economic Statistics, March, 1921.]

Date.	Railroad cars (10 cars).	Locomotives [1] (1 locomotive).	Vessels [2] (thousand gross tons).	Petroleum products.				Lumber, total cut, 5 varieties [3] (million feet).	Lumber cut, southern pine (million feet).	Lumber cut, Douglas fir (million feet).	Paper.						
											Wood pulp.		Newsprint paper.			Book paper (thousand short tons).	Wrapping paper (thousand short tons).
				Gasoline (million gallons).	Kerosene (million gallons).	Lubricating oil (million gallons).	Gas and fuel oil (million gallons).				Production (thousand short tons).	Stocks (tons).	Production (thousand short tons).	Shipments (tons).	Stocks (tons).		
1913 (average)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	108.8	.....	.....	.....	.....
1914 (average)	.....	.....	.....	122.2	.....	.....	.....	.....	.....	.....	.....	.....	106.9	.....	.....	.....	.....
1915 (average)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	103.2	.....	.....	.....	.....
1916 (average)	.....	.....	.....	171.6	121.3	52.04	388.6	.....	.....	.....	.....	.....	112.9	.....	.....	74.33	.....
1917 (average)	.....	.....	.....	237.5	143.9	62.81	542.8	.....	.....	.....	281.0	.....	113.2	.....	.....	74.75	60.67
1918 (average)	819	463	227	297.5	152.1	70.12	610.1	868	371	329	261.8	.....	105.0	.....	.....	76.23	59.50
1919 (average)	1,337	231	355	329.8	195.1	70.56	635.6	838	384	301	282.1	207,976	114.5	.....	.....	78.05	57.85
1920 (average)	539	190	238	406.9	193.5	87.22	738.5	888	378	321	317.3	153,709	126.0	.....	.....	92.04	69.32
1919.																	
October	1,416	144	358	363.5	227.1	78.66	680.2	1,034	.....	.....	308.7	.....	125.2	.....	.....	89.44	67.11
November	1,159	62	347	338.7	214.8	75.96	663.3	854	.....	.....	324.5	.....	116.6	.....	.....	84.06	63.39
December	693	145	294	335.7	229.5	72.04	685.1	671	.....	.....	306.6	.....	122.8	.....	.....	88.78	62.29
1920.																	
January	656	70	254	336.7	196.0	75.88	617.6	847	386	328	302.5	154,517	129.7	128,098	16,934	96.42	70.11
February	503	128	267	322.6	194.5	74.24	589.7	849	383	333	266.2	145,352	114.2	103,214	27,955	85.53	61.57
March	509	104	280	367.1	191.1	81.82	686.9	984	437	343	327.1	145,864	127.8	128,238	27,564	95.85	68.40
April	425	132	251	355.6	184.5	85.57	643.1	1,025	438	360	350.2	160,515	128.3	134,160	21,673	95.25	75.35
May	419	195	185	381.1	180.9	89.25	707.2	1,067	430	425	363.8	183,876	129.2	128,080	22,823	92.36	70.51
June	351	171	267	415.2	173.6	94.96	689.0	967	385	344	337.1	180,711	130.4	129,213	23,990	94.96	72.99
July	316	176	217	423.4	172.2	92.37	751.2	864	386	243	312.3	163,322	129.9	131,821	22,022	95.53	73.49
August	462	239	259	444.1	189.0	91.08	834.3	987	384	366	306.0	142,009	128.8	126,129	24,711	94.42	75.23
September	506	195	262	453.9	199.1	86.23	836.7	911	377	299	293.9	121,338	121.0	121,123	24,593	94.14	70.92
October	699	304	227	465.8	213.7	93.23	823.1	906	344	356	319.9	128,462	124.8	126,815	22,596	93.85	73.10
November	723	277	214	452.6	214.8	91.18	822.6	722	315	263	326.0	146,968	123.0	125,323	20,266	89.56	65.92
December	807	291	177	464.4	210.7	90.89	859.1	526	265	189	302.5	172,649	124.9	120,360	24,763	76.09	54.31
1921.																	
January	801	225	216	460.4	205.4	85.01	836.7	499	290	153	275.4	200,817	123.8	116,176	32,417	64.38	44.62
February	.....	.....	121	388.2	163.1	72.43	732.5	547	331	160	243.8	216,606	103.0	96,281	39,176	56.69	46.35
March	.....	.....	155	419.8	169.2	73.00	758.3	655	388	192	262.3	242,516	107.5	104,919	41,789	59.83	49.88
April	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	268.8	274,292	115.4	122,091	35,106	51.38	51.71
May	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	288,216	.....	82,776	31,198	.....	.....
June	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91,339	26,629	.....	.....

[1] Includes those shipped for domestic use and those completed on foreign orders.
[2] Vessels built in the United States and officially numbered by Bureau of Navigation, including those for foreign nations.
[3] Includes southern pine, western pine, Douglas fir, eastern white pine, and North Carolina pine.

Digitized by Google

TABLE E–15.—*Monthly average net tonnage of vessels cleared from ports of selected countries.*

Date.	Tonnage cleared (millions of tons).					Relative tonnage cleared (monthly average, 1913=100).				
	United States of America.[1 2]	Japan proper.[1 4]	United Kingdom.[3 4]	France.[3 4]	Netherlands.[3 4]	United States of America.	Japan proper.	United Kingdom.	France.	Netherlands.
1913	4,483	2,075	5,652	2,176	918	100	100	100	100	100
1914	4,017	1,963	4,664	1,635	746	90	94	82	76	81
1915	4,164	1,654	3,294	827	302	93	80	58	38	33
1916	4,433	1,717	2,966	713	182	99	83	53	33	20
1917	4,133	1,625	2,173	550	70	92	79	38	25	7
1918	3,748	1,524	1,895	438	75	85	73	34	20	8
1919	4,271	1,927	2,880	782	286	95	93	51	36	31
1920	5,652	.....	3,049	1,412	527	126	.....	54	65	57
1919.										
January	3,063	1,454	2,415	555	230	68	70	43	26	25
February	2,934	1,572	2,368	581	120	65	76	42	27	13
March	2,899	1,923	2,725	593	199	65	93	49	27	22
April	3,803	2,087	2,673	658	176	85	101	47	30	19
May	4,902	1,971	3,323	675	229	109	95	59	31	25
June	4,851	1,984	2,845	714	241	108	95	50	33	26
July	5,283	2,063	2,931	838	259	118	99	52	39	28
August	5,755	1,874	2,635	892	339	129	90	47	41	37
September	5,109	1,884	3,070	878	344	114	91	54	40	38
October	4,719	2,033	3,131	1,027	435	105	98	55	47	47
November	4,162	2,308	3,111	970	409	93	111	55	45	45
December	3,778	1,967	3,328	1,010	447	84	95	59	46	49
1920.										
January	3,883	2,362	3,254	1,081	474	87	114	58	50	52
February	3,331	2,086	3,100	1,045	[5] 335	74	101	55	48	[5] 37
March	4,081	2,319	3,168	1,303	[5] 128	91	112	56	60	[5] 14
April	4,465	2,402	2,673	1,117	[5] 192	100	116	47	51	[5] 21
May	5,166	2,858	2,924	1,005	584	115	138	52	46	64
June	6,341	2,417	3,089	1,390	594	142	117	55	64	65
July	6,918	2,296	3,360	1,643	680	154	111	59	76	74
August	7,546	2,041	2,942	1,543	583	169	98	52	71	64
September	6,935	2,023	3,019	1,623	664	155	97	53	75	72
October	7,257	1,944	2,646	1,749	707	162	93	47	80	77
November	6,171	2,036	3,135	1,676	672	138	98	56	77	73
December	5,735	.....	3,260	1,766	708	128	.....	58	81	77
1921.										
January	4,646	.....	2,617	.....	.....	104	.....	46	.....	.....
February	4,167	.....	.....	.....	.....	93	.....	.....	.....	.....
March	4,494	.....	.....	.....	.....	100	.....	.....	.....	.....

[1] With cargo and in ballast.
[2] With cargo only.
[3] Monthly Summary of Foreign and Domestic Commerce of the United States.
[4] Monthly Bulletin of Statistics, Supreme Economic Council.
[5] Decrease due to strike of dock workers in the Netherlands.

Digitized by Google

TABLE E-16.—*Exports and imports by groups of commodities.*[1]

[Unit: $1,000,000.]

Month.	Exports.								Imports.						
	Total domestic and foreign.	Domestic merchandise.						Foreign merchandise.	Total imports.	Crude material for use in manufacturing.	Foodstuffs in crude condition.	Foodstuffs partly or wholly manufactured.	Manufactures for further use in manufacturing.	Manufactures ready for consumption.	Miscellaneous.
		Crude material for use in manufacturing.	Foodstuffs in crude condition and food animals.	Foodstuffs partly or wholly manufactured.	Manufactures for further use in manufacturing.	Manufactures ready for consumption.	Miscellaneous.								
1913 (average)	207.0	64.1	14.1	27.1	33.1	65.0	0.7	3.0	149.4	50.4	18.4	16.5	28.4	34.4	1.2
1914 (average)	176.1	40.9	22.9	25.7	28.8	52.4	1.9	3.6	149.1	49.8	19.6	21.4	23.0	33.9	1.5
1915 (average)	296.2	47.2	33.7	50.6	39.1	109.6	10.2	5.1	148.2	58.0	20.2	22.8	21.8	24.3	1.1
1916 (average)	456.9	60.1	35.1	54.0	76.0	218.8	7.9	5.0	199.3	84.1	21.7	28.2	34.8	28.8	1.6
1917 (average)	519.5	65.1	42.4	67.2	109.7	225.4	4.3	5.3	246.0	105.7	32.1	29.3	45.1	32.3	1.5
1918 (average)	512.4	79.4	45.6	117.2	87.8	172.4	1.6	8.4	252.6	101.7	28.8	33.1	54.1	33.7	1.1
1919 (average)	660.1	134.2	56.5	163.6	76.8	213.7	1.1	14.3	225.4	139.5	45.4	46.3	50.9	41.0	2.2
1920 (average)	685.7	155.9	76.5	93.1	79.9	267.0	1.0	12.3	440.0	146.1	48.1	103.2	66.8	73.1	2.6
1919.															
January	622.5	137.8	48.5	143.1	86.5	194.3	1.5	11.0	213.0	77.8	28.4	28.6	42.7	34.3	1.1
February	585.1	102.3	36.7	156.4	71.0	205.7	1.9	10.8	235.1	83.3	27.9	47.9	44.4	30.0	1.5
March	603.1	101.1	47.0	183.8	64.6	194.2	1.6	10.7	267.6	99.8	41.0	43.9	50.8	30.0	2.1
April	714.8	94.7	66.2	226.5	73.8	217.8	1.0	34.4	273.0	125.7	34.6	54.1	30.5	26.5	1.4
May	601.0	96.8	72.4	155.0	59.3	208.5	.5	10.9	328.9	146.2	45.1	66.6	36.4	33.6	.9
June	928.4	161.3	80.7	275.4	98.3	291.6	.7	20.6	292.9	135.2	37.1	48.6	38.5	32.5	.8
July	568.7	128.3	37.9	157.7	67.1	166.5	.3	10.7	343.7	152.1	54.1	48.4	50.9	37.1	1.1
August	646.0	130.3	60.0	145.1	87.6	210.8	.5	11.6	307.2	131.7	46.6	37.4	54.7	35.2	1.5
September	595.2	89.3	66.9	124.5	92.5	206.6	.7	14.4	435.4	201.5	62.9	53.4	59.0	54.5	4.0
October	631.6	117.0	55.9	134.2	78.1	234.2	1.1	11.1	401.8	171.0	55.5	49.1	68.3	53.6	4.3
November	740.0	230.0	58.6	135.6	73.8	229.5	1.3	11.0	424.8	183.6	59.3	45.0	71.1	62.4	3.5
December	681.4	221.1	47.5	125.0	69.4	203.6	1.7	13.1	380.7	166.4	52.4	32.6	62.6	62.9	3.8
1920.															
January	722.7	237.5	44.4	137.0	79.5	218.9	1.8	13.5	473.9	215.5	52.7	67.6	67.9	65.5	4.6
February	645.8	175.0	34.9	110.8	77.8	232.1	1.6	13.5	467.6	196.6	42.3	90.5	70.8	62.8	4.6
March	819.8	225.1	49.8	136.4	100.3	289.5	1.8	16.6	523.9	216.6	52.5	97.4	79.9	73.0	4.5
April	684.7	174.9	38.7	105.9	86.9	265.2	.9	11.9	495.7	193.3	57.4	93.0	72.3	76.8	2.8
May	715.9	132.2	67.8	120.5	96.3	309.4	.5	18.9	431.0	149.3	38.3	99.2	68.5	74.3	1.3
June	629.4	107.6	64.3	92.5	82.5	269.5	.6	13.2	552.9	164.4	48.2	177.6	74.2	87.2	1.1
July	651.4	121.0	101.1	75.0	78.9	263.9	.5	11.0	537.2	136.5	52.2	188.1	69.5	88.7	2.1

Digitized by Google

August	579.0	104.4	104.4	49.9	75.6	286.7	.4	7.4	513.5	140.9	48.1	162.1	74.0	86.7	1.7
September	605.2	119.2	108.2	58.7	68.1	240.4	.5	10.2	363.7	102.3	38.1	82.9	63.6	73.7	2.9
October	751.7	173.9	118.7	77.4	75.7	295.5	.8	9.7	334.3	86.0	56.2	59.2	62.2	68.3	2.2
November	676.7	150.3	94.2	75.3	67.2	278.8	.8	10.0	321.2	83.4	49.2	68.9	53.6	64.2	1.9
December	720.8	149.9	91.8	88.6	71.8	306.1	1.3	12.2	266.1	68.6	42.6	53.1	44.3	55.6	1.8
1921.															
January	654.7	112.3	75.4	85.4	68.9	299.1	1.1	12.4	208.8	63.0	28.7	32.0	32.3	51.2	1.5
February	489.3	85.2	60.7	63.3	45.3	218.3	.9	15.6	214.5	73.7	27.3	38.1	28.9	44.8	1.8
March	386.8	69.2	52.7	56.5	32.6	157.6	.8	17.3	252.0	81.4	29.4	51.6	31.2	55.8	2.4
April	339.9	57.4	50.1	50.8	28.3	142.6	.5	10.0	254.6	82.5	34.5	51.9	32.0	53.4	1.2
May	329.7	74.4	59.3	48.0	50.1	90.5	.2	.....	204.9	65.9	26.7	35.6	24.1	51.7	.8
June	336.9	74.0	62.8	52.6	26.9	113.2	.3	7.1	185.7	68.1	19.1	21.3	26.0	40.0	1.1

[a] Source: Monthly Summary, Foreign and Domestic Commerce.

Digitized by Google

Chapter VI.

WAS THE BREAK IN FARM PRICES DUE TO OVER-PRODUCTION OF FARM PRODUCTS?

The answer to this question must be obtained from a study of the per capita consumption of different farm commodities and of farm crops and live stock as a whole over a period of years. If a production in prior years, equal to or greater than the production of 1920, failed to produce a drop in price proportionate to that which occurred in 1920 and 1921, it would seem that the conclusion might be drawn that the break in price in 1920 and 1921 was not due to over-production.

Production is large or small in any given year in comparison with any other year not in proportion to the increase or decrease in the total production of one year as compared with the other, but in the proportion that the total crop in one year bears to the population in that year as compared with the proportion that the total production in another year bears to the population in that year. Therefore, to determine whether production is actually greater or less in one year than in another, it must be reduced to a per capita basis.

In Table F–1, on page 85, is given the actual and relative per capita production of wheat, corn, and cotton, and the number of sheep, hogs, cattle, and milk cows, per 1,000 population, by years from 1890 to 1920 on the basis of the average 1909–1913 inclusive, as 100.

An examination of this table shows that in 1920 the number of milk cows per capita is equal to the 5-year average, the number of hogs somewhat in excess of the average, as was the production of wheat and corn, while the production of cotton and the number of sheep and cattle was somewhat below the average. The production of wheat, corn, and cotton, and the number of sheep, hogs, cattle, and milk cows per 1,000 population was exceeded in each case in a number of years from 1890 to 1920, and in no case during that period was there a decline of the price in the commodities proportionate to the decline which took place in 1920 and 1921.

Table, F–2, on page 86, shows the number of animals slaughtered annually under Federal inspection plus the estimated number slaughtered otherwise in the United States, per 1,000 population, and the relative number slaughtered per 1,000 of population.

Digitized by Google

TABLE F-1.—*Actual and relative per capita production of wheat, corn, and cotton, and the number of sheep, hogs, cattle, and milk cows per 1,000 population, by years, 1890 to 1920.*

[1909-1913=100.]

	Production.							Relative production.						
	Wheat (bushels per capita).	Corn (bushels per capita).	Cotton (bales per 1,000 population).	Sheep (number per 1,000 population).	Hogs (number per 1,000 population).	Cattle (number per 1,000 population).	Milk cows (number per 1,000 population).	Wheat.	Corn.	Cotton.	Sheep.	Hogs.	Cattle.	Milk cows.
Average 1909-1913	7.3	28.9	139	569	653	436	.....	.....	.....	.....	.....	.....	.....	.....
1890	6.3	23.7	138	708	916	538	264	86	82	100	124	140	123	118
1891	9.6	32.2	141	679	791	576	250	131	111	102	119	121	132	112
1892	7.9	24.9	101	688	802	567	251	108	86	73	121	123	130	113
1893	5.9	24.3	112	709	691	526	246	81	84	81	125	106	121	110
1894	6.8	17.8	139	669	660	539	243	93	62	101	118	101	124	109
1895	6.7	31.3	102	610	637	496	238	92	108	74	107	98	114	107
1896	6.0	32.3	121	542	606	454	228	82	112	87	95	93	104	102
1897	7.3	26.4	151	511	564	423	221	100	91	109	90	86	97	100
1898	9.2	26.2	152	513	541	399	216	126	91	110	90	83	92	97
1899	8.8	27.8	125	523	517	374	214	121	96	91	92	79	86	96
1900	6.8	27.7	131	551	627	665	225	93	96	95	97	127	153	101
1901	9.6	19.6	122	769	734	586	216	132	68	88	135	112	134	97
1902	8.4	31.8	134	783	614	565	211	115	110	97	138	94	130	95
1903	7.8	27.7	122	791	583	552	212	107	96	88	139	89	127	95
1904	6.7	29.9	162	626	570	516	211	92	98	117	110	87	118	95
1905	8.2	32.2	127	537	563	519	209	112	111	92	94	86	119	94
1906	8.5	34.1	154	590	607	549	231	116	118	112	104	93	126	104
1907	7.2	29.6	127	609	627	590	240	99	102	92	107	96	135	108
1908	7.4	30.0	148	614	636	563	238	101	104	107	108	97	129	107
1909	7.5	28.1	110	619	608	545	239	103	97	80	109	93	125	107
1910	6.8	31.3	125	569	631	446	224	93	108	91	100	97	102	100
1911	6.6	27.0	167	573	701	424	223	90	93	121	101	107	97	100
1912	7.6	32.9	144	551	689	392	218	104	114	104	97	106	90	98
1913	7.9	25.4	147	534	636	374	213	108	88	107	94	97	86	96
1914	9.1	27.3	165	509	604	367	212	125	94	120	89	92	84	95
1915	10.3	30.2	113	504	653	374	214	141	104	82	89	100	86	96
1916	6.3	25.5	114	484	676	396	220	86	88	83	85	104	91	99
1917	6.2	30.1	111	468	663	410	225	85	104	80	82	102	94	101
1918	8.9	24.2	117	471	689	428	226	122	84	85	83	106	98	101
1919	8.9	27.3	109	468	714	432	224	122	94	79	82	109	99	101
1920	7.4	30.5	123	445	678	420	223	101	106	89	78	104	96	100
1921	.....	.....	.....	425	627	.....	220	.....	.....	.....	75	96	.....	99

Digitized by Google

TABLE F–2.—*Animals slaughtered in the United States, 1907–1920.*

TOTAL NUMBER OF ANIMALS SLAUGHTERED.[1]

Years.	Cattle.	Calves.	Sheep and lambs.	Goats.	Swine.
1907	13,469,900	6,026,800	13,300,600	161,000	55,737,900
1908	12,845,000	5,829,900	13,368,800	121,900	65,496,800
1909	13,611,422	6,515,976	14,724,699	285,553	53,219,568
1910	13,540,600	6,552,600	14,800,200	284,800	44,073,500
1911	12,958,100	6,264,500	18,189,500	110,300	58,022,000
1912	11,979,000	6,348,000	19,433,400	206,800	56,022,000
1913	11,477,600	5,284,500	18,689,400	214,600	57,973,500
1914	11,004,500	4,661,400	18,460,500	499,000	55,148,100
1915	10,822,100	4,639,500	15,843,000	435,000	65,064,000
1916	12,026,700	5,773,900	15,492,200	564,300	73,035,600
1917	13,723,900	7,030,700	12,123,800	470,000	57,483,800
1918	15,750,400	7,767,200	13,385,100	390,100	69,854,700
1919	13,635,100	9,041,000	16,460,600	247,500	70,867,500
1920	12,176,400	9,662,800	14,247,800	120,500	64,449,400

NUMBER OF ANIMALS SLAUGHTERED PER 1,000 POPULATION.

1907	154	69	152	2	638
1908	144	66	150	1	736
1909	150	72	163	3	588
1910	147	71	161	3	478
1911	139	67	194	1	620
1912	126	67	205	2	590
1913	119	55	194	2	602
1914	113	48	189	5	565
1915	109	47	160	4	658
1916	120	58	154	6	728
1917	135	69	119	5	566
1918	153	75	130	4	678
1919	131	87	158	2	679
1920	115	91	135	1	610

RELATIVE NUMBER OF ANIMALS SLAUGHTERED PER 1,000 POPULATION.

[1909–1913=100.]

1907	113	105	83	100	111
1908	106	100	82	50	128
1909	110	109	89	150	102
1910	108	108	88	150	83
1911	102	102	106	50	108
1912	93	102	112	100	103
1913	87	83	106	100	105
1914	83	73	103	250	98
1915	80	71	87	200	114
1916	88	88	84	300	127
1917	99	105	65	250	98
1918	112	114	71	200	118
1919	96	132	86	100	118
1920	85	138	74	50	106

[1] Includes number of animals slaughtered annually under Federal inspection and estimated number slaughtered otherwise, including farms. Bureau of Animal Industry, Department of Agriculture.

In the following table, F–3, page 87, the total number of acres of corn, oats, wheat, barley, rye, and buckwheat, and the total production of these crops in pounds, and the production in pounds per acre and the pounds per capita, is given, together with a table of relatives showing the relative increase or decrease in acreage, total production, production per acre, and production per capita, on the basis of the average 1909–1913 as 100.

Digitized by Google

TABLE F–3.—*Production of grain in the United States.*

[Pounds of corn, oats, wheat, barley, rye, and buckwheat.[1]]

Year.	Acres (000 omitted).	Pounds (000,000 omitted).	Pounds per acre.	Pounds per capita.	Year.	Acres (000 omitted).	Pounds (000,000 omitted.)	Pounds per acre.	Pounds per capita.
1866	61,682	69,110	1,120	1,948	1894	144,216	134,972	936	1,996
1867	64,972	68,249	1,050	1,885	1895	163,052	199,984	1,227	2,901
1868	66,715	75,379	1,134	2,047	1896	167,272	204,973	1,225	2,918
1869	69,458	77,271	1,112	2,047	1897	169,591	189,699	1,119	2,650
1870	69,254	85,945	1,241	2,229	1898	175,199	207,208	1,183	2,841
1871	64,999	80,116	1,233	2,025	1899	184,374	213,157	1,156	2,868
1872	68,280	87,401	1,280	2,153	1900	184,101	212,298	1,153	2,794
1873	74,112	80,496	1,086	1,931	1901	184,630	170,634	924	2,199
1874	80,052	76,573	957	1,789	1902	183,777	233,384	1,273	2,952
1875	86,964	106,004	1,221	2,414	1903	181,671	207,615	1,143	2,568
1876	93,920	102,987	1,097	2,282	1904	181,391	219,516	1,210	2,662
1877	93,205	113,424	1,217	2,447	1905	184,265	242,362	1,315	2,882
1878	100,956	120,245	1,191	2,526	1906	184,577	252,737	1,369	2,949
1879	118,532	150,398	1,272	3,088	1907	183,674	215,647	1,174	2,470
1880	120,927	143,706	1,188	2,865	1908	185,901	219,975	1,183	2,473
1881	123,389	106,330	866	2,082	1909	188,577	232,131	1,231	2,563
1882	126,569	140,985	1,114	2,696	1910	198,052	248,344	1,256	2,700
1883	130,534	134,753	1,032	2,510	1911	203,718	218,946	1,075	2,341
1884	136,293	155,067	1,138	2,824	1912	201,302	277,353	1,380	2,929
1885	135,875	154,619	1,138	2,754	1913	205,264	230,265	1,122	2,393
1886	141,359	145,464	1,025	2,534	1914	206,316	252,216	1,222	2,585
1887	141,322	134,439	948	2,291	1915	218,708	293,560	1,342	2,987
1888	146,281	163,960	1,121	2,734	1916	211,893	235,025	1,109	2,344
1889	140,219	169,563	1,209	2,767	1917	219,546	275,278	1,254	2,709
1890	138,993	128,186	924	2,040	1918	225,155	262,864	1,167	2,553
1891	146,732	184,072	1,254	2,883	1919	232,991	273,474	1,174	2,621
1892	147,227	156,557	1,063	2,405	1920	218,971	291,315	1,330	2,756
1893	147,726	149,150	1,010	2,248					

RELATIVE PRODUCTION, ACREAGE, AND YIELD OF GRAIN IN THE UNITED STATES, 1866–1920.

[1909–1913=100.]

Year.	Acres (000 omitted).	Pounds (000,000 omitted).	Pounds per acre.	Pounds per capita.	Year.	Acres (000 omitted).	Pounds (000,000 omitted).	Pounds per acre.	Pounds per capita.
1866	31	28	92	75	1894	72	56	77	77
1867	33	28	87	73	1895	82	83	102	112
1868	34	31	93	79	1896	84	85	102	113
1869	35	32	92	79	1897	85	79	93	102
1870	35	36	102	86	1898	88	86	98	110
1871	33	33	102	78	1899	93	88	96	111
1872	34	36	106	83	1900	92	88	95	108
1873	37	33	89	75	1901	93	71	76	85
1874	40	32	79	69	1902	92	97	105	114
1875	44	44	101	93	1903	91	86	94	99
1876	47	43	90	88	1904	91	91	100	103
1877	47	47	100	95	1905	92	100	109	111
1878	51	50	98	98	1906	93	105	113	114
1879	60	62	105	119	1907	92	89	97	95
1880	61	60	98	111	1908	93	91	98	95
1881	62	44	72	80	1909	95	96	102	99
1882	64	58	92	104	1910	99	103	104	104
1883	66	56	85	97	1911	102	90	89	90
1884	68	64	94	109	1912	101	115	114	113
1885	68	64	94	106	1913	103	95	93	92
1886	71	60	85	98	1914	104	104	101	100
1887	71	55	78	88	1915	110	121	111	115
1888	73	68	93	105	1916	106	97	92	90
1889	70	70	100	107	1917	110	114	103	105
1890	70	53	76	79	1918	113	109	97	98
1891	74	76	103	111	1919	117	113	97	101
1892	74	65	88	132	1920	110	120	110	107
1893	74	62	83	87					

[1] Grain as reported by the Bureau of Crop Estimates, converted to pounds by multiplying corn and rye by 56, wheat by 60, oats by 32, barley and buckwheat by 48. For the years 1879 and 1889 to 1909 ,revised figures as given in the Yearbook for 1919 are used.

Digitized by Google

It will be seen from this table that the per capita production of these products in 1920 was exceeded in a number of years during the period 1890 to 1920, including 1912 and 1915. In none of these years, so far as the records show, was the drop in price of these products proportionate to the drop in price which occurred in 1920 and 1921.

In the table which follows, F–4, the estimate of the National Bureau of Economic Research of the output of agricultural products per inhabitant and per persons engaged in agriculture in continental United States is given for the years 1909 to 1920:

TABLE F–4.—*An estimate for the Continental United States of the output of agricultural products per inhabitant and per person engaged in agriculture.*

[Prepared by the National Bureau of Economic Research.]

A	B	C	D	E	F	G	H
Year.	Thousands of persons engaged in agriculture.			Estimated population of United States [4] June 30 (millions).	Value of output at prices of 1913.		
	Farmers.	Employees.	Total.		Total (millions).	Per person engaged in agriculture (F+D).	Per inhabitant of United States (F+E).
1909	[3] 6,330	2,376	8,706	90.4	$5,375	$614	$59
1910	[1] 6,362	2,379	8,741	92.2	6,359	726	68
1911	[3] 6,376	2,388	8,764	93.8	6,084	694	64
1912	[3] 6,388	2,390	8,778	95.3	5,998	681	63
1913	[3] 6,400	2,394	8,794	97.3	5,960	678	61
1914	[3] 6,410	2,393	8,803	99.2	6,481	784	65
1915	[3] 6,418	2,382	8,800	100.4	6,737	764	68
1916	[3] 6,425	2,373	8,798	101.7	5,590	685	55
1917	[3] 6,432	2,288	8,720	103.1	5,642	646	55
1918	[3] 6,438	2,121	8,559	104.2	6,732	786	64
1919	[3] 6,443	2,220	8,664	104.8	7,117	823	68
1920	[2] 6,448	2,366	8,814	106.6	[5] 6,815	774	63

[1] Abstract of Census of United States, 1910, p. 265. Number of farms identical with number of farmers.
[2] Press bulletin of Bureau of Census, June 22, 1921.
[3] Interpolated along a smooth curve.
[4] Interpolated between census estimates by means of a special study elsewhere recorded.
[5] Rough estimate only.

An examination of this table discloses the fact that the output per person engaged in agriculture in 1920 was exceeded only in 1918 and 1914, but the output per inhabitant of the United States, or per capita, had been equaled or exceeded in 1910, 1911, 1912, 1914, 1915, 1916, and 1918, or 8 out of the preceding 11 years. This table supports the conclusion indicated by tables F–1, F–2, and F–3, that the drop in prices in 1920 and 1921 was not due to overproduction in the crop year of 1920, as the crop in 1920 was not relatively greater than it has been in many preceding years.

In general it may be concluded that, on the basis of the tables of output it has been possible for the commission to secure, the decline in prices in 1920 and 1921 was not in any large measure due to overproduction in the crop year of 1920.

Digitized by Google

Chapter VII.

THE EXPORTS AND IMPORTS OF FARM PRODUCTS AND THEIR EFFECT UPON PRICES.

In the preceding chapter, "Was the break in farm prices due to overproduction of farm products?" the general question of whether the decline in prices was due to overproduction was considered. A true picture of the situation, however, can not be obtained solely from a consideration of quantity production without at the same time considering imports as a part of the supply and exports as a part of the effective demand, as of course the domestic price is made by the net production remaining after adding imports and deducting exports.

In this chapter the influence of imports and exports and their relation to production and prices is considered.

In order to arrive at the relative influence of these factors in determining the price it is necessary to marshal them in such a way that their relation to each other is plainly established in order that conclusions can be adequately drawn.

WHEAT.

The production of wheat in 1920 was 787,000,000 bushels—8,000,000 bushels above the average of the 10 preceding years.

The total supply of wheat in 1920, including carry over, was 902,000,000 bushels—40,000,000 bushels above the 10-year average. Notwithstanding this relatively large supply of wheat the price remained above the average of farm products throughout 1920 and thus far in 1921. It was also above the average monthly price in 1913. In May, 1921, the wholesale price of wheat was 70.8 per cent above and the wholesale price of flour was 98.2 per cent above the monthly average in 1913.

The actual production of wheat and the relative production of wheat on base 1910–1914 are shown in the following table:

Table G–1.—*Production of wheat and relative production, by years 1910-1920.*

[Base, 1910-1914. 000 omitted.]

Years.	Actual total domestic production.	Relative total domestic production.	Years.	Actual total domestic production.	Relative total domestic production.
1910	635,121	87	1916	636,318	87
1911	621,338	85	1917	636,055	87
1912	730,267	100	1918	921,438	126
1913	763,380	105	1919	934,265	128
1914	891,017	122	1920	787,128	108
1915	1,025,801	140			

Digitized by Google

The price of wheat began to decline rapidly in May, 1920, following a short period of declining exports and continued to decline rapidly; notwithstanding exports of wheat continued to be made on a very high level. While this increase in the exports of wheat in 1920–1921 did not serve to maintain the price of wheat at the 1919 level, it undoubtedly was influential in maintaining the price of wheat relatively above the price of other grains and farm animals notwithstanding the decline in consumption of wheat which occurred in 1920.

The following table shows the actual and relative export, import, reexport and net export of wheat, with the weighted index of the wholesale prices of wheat in the United States:

TABLE G-2.—*The actual and relative export, import, reexport, and net export of wheat, 1909-1921.*

[1909–1913=100.]

[Source: Commerce Reports.]

Years and months.	Exports.		Imports.		Reexports (bushels).	Net exports.		Weighted index number of wholesale prices of wheat, monthly average (1909–1913 =100).[1]
	Bushels.	Relative	Bushels.	Relative.		Bushels.	Relative	
1909–10	46,679,876	82	164,201	13	136,519	46,652,194	83	.....
1910–11	23,729,302	42	509,439	41	1,361	23,221,224	42	.....
1911–12	30,160,212	53	2,699,130	219	872	27,461,954	49	.....
1912–13	91,602,974	161	798,028	65	78,690	90,883,636	163	.....
1913–14	92,393,775	162	1,978,937	161	746,492	91,161,330	464	.....
1914–15	259,642,533	456	426,469	35	181,072	259,397,136	464	.....
1915–16	173,274,015	304	5,703,078	464	575,471	168,146,408	301	.....
1916–17	149,831,427	263	24,138,817	1,963	53,863	125,746,473	225	.....
1917–18	34,118,853	60	28,177,281	2,291	1,053,744	6,995,316	13	.....
1918–19	178,582,673	314	11,121,461	904	498,762	167,959,974	301	.....
1919–20	122,430,724	215	4,779,764	389	94,000	117,744,060	211	.....
1920–21	293,267,637	515	51,004,024	4,147	.....	242,263,613	434	.....
1919								
January	9,942,992	210	796,265	776	.....	9,146,727	196	226
February	5,991,688	126	420,538	410	.....	5,571,150	120	235
March	10,208,355	215	381,568	372	.....	9,826,787	211	243
April	17,337,897	366	1,049,746	1,024	.....	16,288,151	350	328
May	14,028,479	296	1,527,748	1,490	.....	12,500,731	268	271
June	16,389,853	346	1,896,331	371	792	14,494,314	303	253
July	5,834,154	123	380,443	1,850	.....	5,453,711	117	252
August	12,940,581	273	28,697	28	.....	12,911,884	277	242
September	17,089,923	360	143,298	140	.....	16,946,625	364	245
October	13,686,675	289	569,068	555	94,000	13,211,607	284	253
November	15,116,167	319	407,817	398	.....	14,708,350	316	269
December	9,519,706	201	309,182	301	.....	9,210,524	198	288
1920								
January	8,480,072	179	756,228	738	.....	7,723,844	166	293
February	4,938,122	104	534,692	522	.....	4,403,430	95	268
March	6,939,484	146	665,154	649	2,116	6,276,446	135	272
April	4,175,876	88	227,284	221	.....	3,948,592	85	298
May	10,864,059	229	474,891	463	.....	10,389,168	223	310
June	12,845,905	271	283,010	276	.....	12,562,895	270	298
July	23,837,541	503	100,334	98	.....	23,737,207	510	289
August	27,569,982	581	364,827	355	.....	27,205,155	584	258
September	30,770,796	649	1,842,397	1,797	10	28,928,409	621	255
October	35,802,977	755	9,802,149	9,563	.....	26,000,828	558	219
November	26,035,147	549	9,522,578	9,291	.....	16,512,569	355	188
December	25,896,270	546	11,275,104	11,000	167,545	14,788,711	318	180
1921								
January	21,344,873	450	4,504,856	4,395	124,116	16,964,133	364	185
February	18,468,711	389	4,403,712	4,297	2,000	14,066,999	302	175
March	14,599,481	308	2,671,043	2,606	71,644	12,000,082	258	164
April	17,641,424	372	4,451,304	4,343	557,777	13,747,897	295	141
May	25,932,292	547	1,902,667	1,856	42,909	24,072,534	517	154
June	25,235,351	532	89,807	88	.....	25,145,544	540	148

[1] Weighted index computed from monthly average wholesale prices of No. 1 Northern Spring Cash, Chicago; No. 2 Red Winter, Chicago; No. 2 Hard Winter, Kansas City; No. 1 Northern Spring Cash, Minneapolis; and Bluestem, Portland.

Digitized by Google

WHEAT FLOUR.

Production of wheat flour as indicated by the following Table G–3, began to decline as early as February, 1920, and was below the 1919 monthly average production in every month thereafter until June, 1921, with the exception of August, 1920.

TABLE G–3.—*Production of wheat flour, 1914–1921.*[1]

Year and month.	Wheat flour, production.	Wheat flour, relative production (relative to 1914).	Year and month.	Wheat flour, production.	Wheat flour, relative production (relative to 1914).
	Bushels.		1920—Continued.	*Bushels.*	
1914 monthly avearge	10,794,000	100	July	8,200,000	76
1915 monthly average	9,748,000	90	August	10,200,000	94
1916 monthly average	10,285,000	95	September	9,450,000	88
1917 monthly average	.....	.....	October	9,650,000	89
1918 monthly average	9,615,000	89	November	9,500,000	88
1919 monthly average	10,094,000	94	December	9,600,000	89
1920 monthly average	9,157,000	85			
1920.			1921.		
January	12,572,000	116	January	8,787,000	81
February	9,252,000	86	February	8,067,000	75
March	9,036,000	84	March	9,103 000	84
April	7,375,000	68	April	8 510,000	79
May	8,244,000	76	May	8,175,000	76
June	6,800,000	63	June	7,745,000	72

[1] Figures prior to July, 1920, compiled by U. S. Grain Corporation; recent months from Russel's Commercial News. In calendar years; remaining averages are for crop years ending June 30 of the year indicated.

The price of wheat flour, however, did not begin to decline until June, 1920, in which month the exports of wheat flour began definitely to fall off, as indicated by the following table, G–4. Imports of flour during this period were quite large.

TABLE G–4.—*The actual and relative export, import, reexport, and net export of wheat flour, 1909–1921.*

[Source: Commerce Reports.]

[1909–1913=100.]

Years and months.	Exports.		Imports.		Reexports (bushels).	Net exports.		Weighted index number of wholesale prices of wheat flour (1910–1914=100).[1]
	Bushels.	Relative.	Bushels.	Relative.		Bushels.	Relative.	
1909–10	9,040,987	85	144,759	112	31	8,896,259	84	.....
1910–11	10,129,435	95	141,582	110	8	9,987,861	95	.....
1911–12	11,006,489	103	158,777	123	93	10,847,805	103	.....
1912–13	11,394,805	109	107,558	84	966	11,288,213	107	.....
1913–14	11,821,461	111	89,911	70	1,376	11,732,926	111	.....
1914–15	16,182,765	152	64,200	50	1,533	16,120,097	153	.....
1915–16	15,520,669	145	329,905	257	10,171	15,200,935	144	.....
1916–17	11,942,778	112	174,704	136	2,241	11,770,315	112	.....
1917–18	21,879,951	205	675,096	525	79,505	21,284,360	202	.....
1918–19	24,181,979	226	37,140	29	816	24,145,655	229	.....
1919–20	21,651,261	203	159,056	124	12,148	21,504,353	204	.....
1920–21	16,183,234	152	1,420,884	1,105	.....	14,762,350	140	.....

[1] Price series used in computing the index taken from wholesale prices Bulletins of Bureau of Labor Statistics.

Digitized by Google

TABLE G–4.—*The actual and relative export, import, reexport, and net export of wheat flour, 1909–1921*—Continued.

Years and months.	Exports.		Imports.		Reexports (bushels).	Net exports.		Weighted index number of wholesale prices of wheat flour (1910–1914 =100).
	Bushels.	Relative.	Bushels.	Relative.		Bushels.	Relative.	
1919.								
January	2,702,218	303	2,163	18	.....	2,700,056	307	221
February	2,189,007	246	431	4	.....	2,188,576	249	224
March	2,245,791	253	548	5	.....	2,245,243	255	230
April	3,064,670	344	425	4	100	3,064,245	349	252
May	2,728,159	307	2,432	22	700	2,726,427	310	262
June	3,613,714	406	1,740	16	10	3,611,984	411	249
July	1,731,017	195	1,740	16	1	1,729,278	197	243
August	1,637,668	184	770	7	.....	1,636,898	186	238
September	1,764,283	198	451	4	9,697	1,773,529	202	236
October	1,620,492	182	882	8	.....	1,619,610	184	246
November	1,839,880	207	1,252	12	.....	1,838,628	209	262
December	1,312,982	148	3,789	35	.....	1,309,193	148	287
1920.								
January	843,018	95	29,011	270	.....	814,007	93	297
February	1,254,081	141	27,362	255	.....	1,226,719	139	273
March	2,209,202	248	11,524	108	.....	2,197,678	250	272
April	2,121,266	238	22,044	205	.....	2,099,222	239	290
May	3,338,379	375	20,948	196	.....	3,317,431	378	308
June	1,979,493	223	39,283	367	334	1,940,544	221	292
July	2,403,822	270	26,397	246	200	2,377,625	270	282
August	1,106,707	124	17,722	165	.....	1,088,985	124	256
September	938,530	105	14,556	136	100	924,074	105	261
October	1,606,770	181	163,327	1,524	626	1,444,069	164	231
November	1,100,754	124	201,667	1,883	373	899,460	102	198
December	951,730	107	226,798	2,118	206	725,138	82	186
1921.								
January	1,279,945	144	220,443	2,058	7,967	1,067,469	121	196
February	1,023,666	115	202,324	1,889	11,142	832,484	95	188
March	1,369,680	154	174,464	1,628	6,870	1,202,086	137	180
April	1,591,095	179	118,944	1,111	3,749	1,475,900	168	163
May	1,264,818	142	47,851	448	3,260	1,220,227	139	177
June	1,545,984	174	6,287	59	.....	1,539,697	175	181

The net export of wheat flour during the crop year of 1920–21 was relatively less than during any crop year since 1914, with the exception of the crop year 1916–17.

WHEAT AND WHEAT FLOUR.

A real picture of the situation with respect to wheat can not be obtained, however, on the basis of the production, consumption, and export of either wheat or wheat flour separately. In the following table, G–5, the exports, imports, and reexports of wheat and wheat flour are combined for the fiscal years 1909–10 to 1920–21, and by months beginning with January, 1919. The combined exports by months are compared with the weighted index of wholesale prices of wheat and wheat flour.

Digitized by Google

TABLE G–5.—*The actual and relative export, import, reexport, and net export of wheat and wheat flour, 1909–1921.*[1]

[Source: Commerce Reports.

[1909–1913=100.]

Years and months.	Exports.		Imports.		Reexports (bushels).	Net exports.		Weighted index of wholesale prices of wheat (1910–1914=100).
	Bushels	Relative.	Bushels.	Relative.		Bushels.	Relative.	
1909–10	87,384,317	88	815,616	64	136,658	86,705,359	89	.....
1910–11	69,311,759	70	1,146,558	90	1,397	68,166,598	70	.....
1911–12	49,529,191	50	714,496	56	418	48,815,113	50	.....
1912–13	142,879,597	144	1,282,039	101	83,037	141,680,595	145	.....
1913–14	845,590,350	147	2,383,537	187	752,684	143,959,497	146	.....
1914–15	332,464,976	336	715,369	56	187,971	331,937,578	339	.....
1915–16	243,117,026	246	7,187,651	566	621,241	236,550,616	242	.....
1916–17	203,573,928	206	24,924,965	1,964	63,948	178,712,891	183	.....
1917–18	132,578,633	134	31,215,213	2,461	411,517	101,774,937	104	.....
1918–19	267,401,579	290	11,288,591	890	1,502,434	277,615,422	284	.....
1919–20	219,861,399	222	5,495,516	433	148,666	214,514,549	220	.....
1920–21	366,092,190	370	51,398,002	4,053	984,840	305,679,028	312	.....
1919.								
January	22,102,973	267	805,999	763	.....	21,296,974	261	236
February	15,842,220	194	422,478	399	.....	15,419,742	189	235
March	20,314,415	246	384,034	363	.....	19,930,381	244	243
April	31,128,912	378	1,051,659	995	450	30,077,703	368	328
May	26,305,195	319	1,538,692	1,456	3,150	24,769,653	303	271
June	32,651,566	396	1,904,161	1,801	837	30,748,242	376	253
July	13,623,731	165	388,273	367	5	13,235,463	162	252
August	20,310,067	246	32,162	30	.....	20,277,925	248	242
September	25,029,197	303	145,328	137	43,637	24,927,506	305	245
October	20,978,889	254	573,037	542	94,000	20,499,852	251	253
November	23,395,627	284	413,451	390	.....	22,982,175	282	269
December	15,428,125	187	336,233	308	.....	15,101,892	185	288
1920.								
January	12,273,653	149	886,778	839	.....	11,386,875	140	293
February	10,581,487	129	657,821	622	.....	9,923,666	121	268
March	16,880,893	205	717,012	678	2,116	16,165,997	198	272
April	13,731,573	166	326,648	309	.....	13,394,925	164	298
May	25,887,665	314	569,157	538	.....	25,318,508	310	289
June	21,753,624	264	459,784	435	1,503	21,295,341	261	350
July	34,654,740	421	219,121	207	900	34,436,519	421	298
August	32,550,164	395	444,576	421	.....	32,105,588	393	289
September	34,994,181	425	1,907,899	1,805	460	33,086,741	405	258
October	43,033,442	522	10,537,121	9,968	2,817	32,499,130	398	255
November	30,988,540	376	10,430,080	9,867	1,679	20,560,138	252	219
December	30,179,055	366	12,295,690	11,632	168,472	18,051,836	222	188
1921.								
January	27,104,626	329	5,496,850	5,200	159,954	21,767,720	267	185
February	23,075,208	280	5,314,170	5,027	52,139	17,813,176	218	175
March	20,763,041	252	3,456,131	3,270	102,559	17,409,469	213	164
April	24,801,352	301	4,966,552	4,719	574,648	20,389,448	250	141
May	31,623,973	383	2,117,997	2,003	57,336	29,563,312	362	154
June	32,192,279	391	118,099	117	984,440	33,058,620	429	148

[1] Wheat flour converted to bushels by multiplying barrels by 4½.

The combined prices of wheat and wheat flour reached the maximum in June, 1920, following a period of relatively low exports compared with the monthly average of 1919. The peak of exports of wheat and wheat flour was reached in July, 1920, and exports of wheat and wheat flour combined declined rapidly thereafter until May, 1921, when they began again to increase.

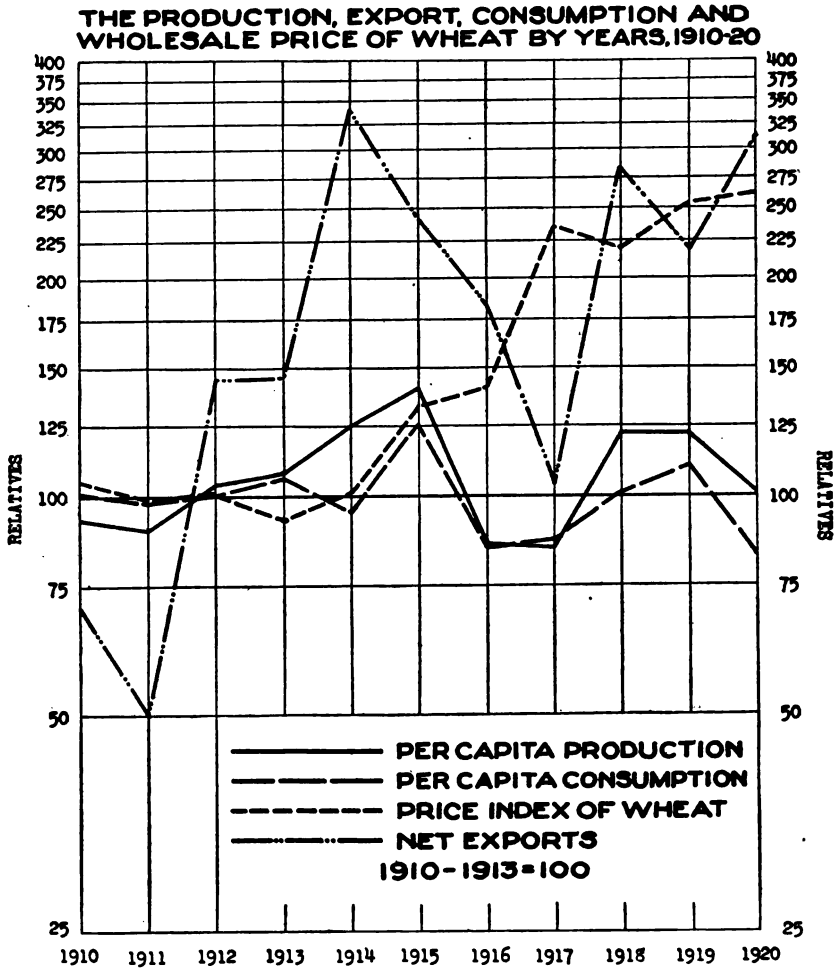
On the whole, the exports of wheat and wheat flour in the fiscal year ending June 1, 1921, were greater than in any of the preceding 10 years, except 1915, when the crop was the largest in the history of the country and, this relatively large export served to retard the

Digitized by Google

decline in the prices of wheat and wheat flour as compared with other farm commodities.

The following chart, G–1, shows graphically in their relations to each other the per capita production of wheat, the per capita consumption of wheat and wheat flour, net exports of wheat and wheat flour, and the price of wheat and wheat flour combined, by years, from 1910 to 1920:

CHART G–1.



Chart, G–2, page 95, shows graphically the relations between the exports of wheat and the price of wheat by months, beginning with January, 1919, and concluding June, 1921.

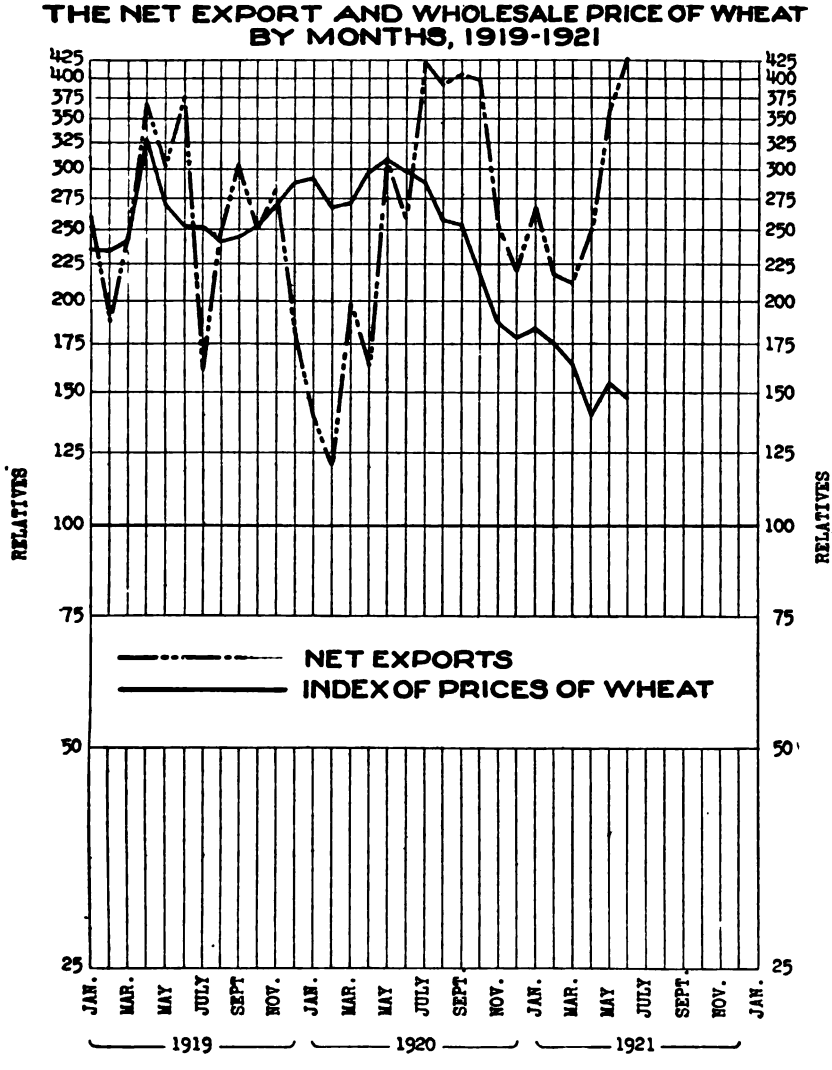
Exports of wheat began to rise rapidly in 1913, reaching the peak in 1914, dropping again to a low point in 1917, which was a year of small production in the United States, rising again in 1918, falling slightly in 1919, and rising again in 1920.

The price of wheat has not borne a very consistent relation to exports. The greatest rise in the price of wheat did not take place until

Digitized by Google

1917, during which exports of wheat were relatively low. This increase in price was probably due to the small crop in 1917 which was below normal. The price of wheat apparently bears a closer relation to the general level of prices than it does to fluctuations of exports. In other words, the increased price of wheat was apparently due in

CHART G–2.



a larger measure to factors which caused a general increase in prices in 1916, 1917, 1918, and 1919 than to either of the factors of production or export.

Examination of Chart G–2 again demonstrates the lack of definite relation of prices of wheat flour and wheat to exports. While in a general way exports and prices declined together and rose together

Digitized by Google

during these months, the peak of prices was apparently reached before the peak of exports and the bottom of the decline after the low point was reached in exports.

Examination of all of the data touching upon the factors of supply and demand, which should normally be reflected in the price, seems to lead to the conclusion that other factors than those indicated in the charts and tables which the commission has been able to compile has had a larger influence in determining the price.

The following tables, G–6 and G–7, give the actual and relative figures upon which the preceding charts G–1 and G–2 are based:

TABLE G–6.—*Actual price series composing the price index of wheat and wheat flour.*

[Wholesale Price Bulletin, Bureau of Labor Statistics.]

Date.	Wheat (price per bushel).					Wheat flour (price per barrel).				Weighted index (1910–1914=100) of prices of—		
	Chicago.		Kansas City, No. 2 hard winter.	Minneapolis, No. 1 northern spring.	Portland, blue stem.	Kansas City.		Minneapolis.		Wheat.	Wheat flour.	Wheat and wheat flour.
	No. 1 northern spring.	No. 2 red winter.				Winter patent flours.	Winter straight flours.	Standard patents.	Second patents.			
1910	$1.097	$1.053	$0.956	$1.047	$1.050	$4.50	$4.691	$5.495	$5.252	105	107	106
1911	.984	1.000	.940	.947	1.009	4.200	3.984	5.078	4.952	99	98	99
1912	1.049	1.009	.946	.984	1.039	4.412	4.686	5.271	5.152	101	104	102
1913	.874	.986	.877	.874	.929	4.012	4.308	4.544	4.422	93	91	92
1914	1.003	1.005	.939	1.003	1.009	4.363	4.125	5.096	4.939	101	100	101
1915	1.306	1.307	1.290	1.306	1.116	4.861	5.612	6.663	6.503	133	132	133
1916	1.411	1.351	1.329	1.411	1.175	6.364	6.091	7.264	7.090	140	144	141
1917	2.325	2.278	2.296	2.325	2.059	10.950	10.551	11.391	11.230	237	234	236
1918	2.191	2.209	2.159	2.191	2.159	11.334	10.304	11.694	10.141	213	236	219
1919	2.566	2.357	2.418	2.566	2.398	11.719	10.695	11.998	11.982	255	247	253
1920	2.563	2.523	2.455	2.558	2.575	12.524	11.580	12.713	12.266	260	262	261
1919.												
January	2.223	2.379	2.313	2.223	2.200	10.490	9.513	10.275	12.013	236	221	232
February	2.238	2.345	2.278	2.235	2.200	10.490	9.525	10.550	12.013	235	224	232
March	2.328	2.358	2.378	2.328	2.320	10.490	9.740	11.213	12.013	243	230	240
April	2.589	2.630	2.605	2.589	2.340	11.938	11.225	12.215	12.013	328	252	307
May	2.598	2.780	2.611	2.598	2.340	12.990	11.780	12.419	12.044	271	262	268
June	2.458	2.361	2.489	2.458	2.340	12.006	11.019	12.013	11.488	253	249	252
July	2.680	2.258	2.310	2.680	2.200	11.113	10.294	12.155	11.665	252	243	250
August	2.525	2.239	2.213	2.525	2.235	10.695	10.155	12.006	11.256	242	238	241
September	2.535	2.239	2.269	2.535	2.330	10.981	10.319	11.620	11.213	245	236	243
October	2.625	2.239	2.363	2.625	2.488	11.556	10.738	12.031	11.669	253	246	251
November	2.825	2.288	2.489	2.825	2.733	12.065	11.240	12.950	12.581	269	262	267
December	3.030	2.449	2.662	3.030	2.968	13.519	12.781	14.025	13.510	288	287	288
1920.												
January	2.931	2.634	2.766	2.931	3.200	14.075	12.985	14.444	13.969	293	297	294
February	2.688	2.490	2.461	2.688	3.000	12.644	11.744	13.538	12.969	268	273	269
March	2.755	2.500	2.545	2.755	2.800	13.000	12.213	13.165	12.690	272	272	272
April	3.006	2.773	2.789	3.006	2.938	13.519	12.494	14.281	13.750	298	290	296
May	3.075	2.975	2.929	3.075	2.913	14.520	13.425	15.031	14.538	310	308	309
June	2.900	2.895	2.805	2.900	2.960	13.875	12.813	14.160	13.815	298	292	295
July	2.831	2.905	2.748	2.831	2.813	13.450	12.410	13.669	13.319	289	282	287
August	2.550	2.474	2.452	2.550	2.490	12.400	11.644	12.235	11.855	258	256	257
September	2.490	2.492	2.450	2.490	2.363	12.544	11.694	12.594	12.238	255	261	257
October	2.106	2.205	2.079	2.106	2.175	11.075	10.205	11.206	10.888	219	231	222
November	1.753	2.057	1.793	1.753	1.630	9.281	8.400	9.295	9.055	188	193	189
December	1.681	2.013	1.701	1.681	1.575	9.144	8.256	8.944	8.525	180	186	182
1921.												
January	1.788	1.961	1.723	1.788	1.633	9.260	8.295	9.625	9.300	185	196	188
February	1.671	1.919	1.619	1.671	1.563	8.950	7.963	9.181	8.844	175	188	178
March	1.614	1.680	1.545	1.614	1.443	8.694	7.994	8.730	8.310	164	180	169
April	1.406	1.387	1.313	1.406	1.295	7.740	6.980	7.950	7.631	141	163	147
May	1.492	1.568	1.471	1.492	1.360	8.219	7.625	8.745	8.365	154	177	160
June	1.499	1.438	1.378	1.499	1.308	8.294	7.700	9.006	8.694	148	181	157
July	1.438	1.229	1.220	1.438	1.140	7.445	8.895	8.900	8.613	135	173	145

Digitized by Google

TABLE G–7.—*Wheat and wheat flour production, exports, imports, consumption, and price.*

ACTUAL FIGURES, BY YEARS.

Years.	Total domestic production (000 omitted).[1]	Export of domestic product.[2]	Imports.	Net exports.[3]	Amount available for consumption, allowing for carrying over (000 omitted).[4]	Per capita production.	Per capita consumption after adjusting carry over.	Per cent of domestic crop exported.	Weighted index of prices of wheat and wheat flour (1910–1914=100).	Weighted index of prices of wheat per bushel (1910–1914=100).[5]	Weighted index of price of wheat flour per barrel (1910–1914=100).[6]
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*		*Bushels.*	*Bushels.*				
1910	635,121	69,311,759	1,146,558	68,166,598	568,563	6.8	6.13	10.9	106	105	107
1911	621,338	49,529,191	714,496	48,815,113	555,255	6.6	5.94	12.8	99	99	98
1912	730,267	142,879,507	1,282,039	141,680,595	576,947	7.6	6.08	19.6	102	101	104
1913	763,380	845,590,350	2,383,537	143,959,497	622,699	7.9	6.47	19.1	92	93	91
1914	891,017	332,464,976	715,369	331,937,578	562,344	9.1	5.77	37.3	101	101	100
1915	1,025,801	243,117,026	7,187,651	236,550,616	743,491	10.3	7.62	23.7	133	133	132
1916	636,318	203,573,928	24,924,985	178,712,801	516,725	6.3	5.15	32.0	141	141	144
1917	636,655	132,578,633	31,215,213	101,774,937	541,428	6.2	5.32	20.8	236	236	234
1918	921,438	287,401,579	11,288,591	277,615,422	633,568	8.9	6.15	31.8	219	219	236
1919	934,265	219,861,399	5,495,516	214,514,549	691,793	8.9	6.66	23.5	253	253	247
1920	787,128	366,092,190	51,398,002	305,679,028	532,800	7.4	5.04	45.4	261	261	262
RELATIVE FIGURES, BY YEARS. (1910–1914=100.)											
1910	87	[7] 70	[7] 90	[7] 70	98	93	101	55	.....	.....	.....
1911	85	50	56	50	96	90	98	64	.....	.....	.....
1912	100	144	101	145	100	104	100	98	.....	.....	.....
1913	105	147	187	146	108	108	106	96	.....	.....	.....
1914	122	336	56	339	97	125	95	187	.....	.....	.....
1915	140	246	566	242	129	141	125	119	.....	.....	.....
1916	87	206	1,964	183	89	86	85	161	.....	.....	.....
1917	87	134	2,461	104	94	85	87	105	.....	.....	.....
1918	126	290	890	284	110	122	101	157	.....	.....	.....
1919	128	222	433	220	120	122	110	118	.....	.....	.....
1920	108	370	4,053	312	92	101	83	228	.....	.....	.....

[1] Department of Agriculture estimates, Year Book of Agriculture.

[2] Wheat flour converted to bushels by multiplying barrels by 4½.

[3] Exports after subtracting imports and adding reexports. For fiscal years beginning July 1. Wheat reduced to wheat equivalent at the rate of 4½ bushels to a barrel.

[4] Domestic production plus imports, minus exports and reexports, after allowing for carry over each year.

[5] Index based upon price of wheat; No. 1 northern spring, Minneapolis; No. 1 northern spring, Chicago; No. 2 red winter, Chicago; No. 2 hard winter, Kansas City; Bluestena, Portland.

[6] Index based on prices of winter patent, Kansas City; winter straights, Kansas City; standard patents, Minneapolis; second patents, Minneapolis.

[7] Average for fiscal years 1909–1913=100.

Digitized by Google

TABLE G-7.—*Wheat and wheat flour production, exports, imports, consumption, and price*—Continued.

ACTUAL FIGURES, BY MONTHS.

	Export of domestic product.	Imports.	Net exports.[3]	Relative exports, (average, fiscal years 1909–1913 =100).	Weighted index of prices of wheat and wheat flour (1910–1914=100).	Weighted index of prices of wheat (1910–1914=100).[5]	Weighted index of prices of wheat flour (1910–1914=100).[6]
	Bushels.	*Bushels.*	*Bushels.*				
1919—January	22,102,973	805,999	21,296,974	261	232	236	221
February	15,842,220	422,478	15,419,742	189	232	235	224
March	20,314,415	384,034	19,930,381	244	240	243	230
April	31,128,912	1,051,659	30,077,703	368	307	328	252
May	26,305,195	1,538,692	24,769,653	303	268	271	262
June	32,651,566	1,904,161	30,748,242	376	252	253	249
July	13,623,731	388,273	13,235,463	162	250	252	243
August	20,310,087	32,162	20,277,925	248	241	242	238
September	25,029,197	145,328	24,927,506	305	243	245	236
October	20,978,889	573,037	20,499,852	251	251	253	246
November	23,395,627	413,451	22,982,175	282	267	269	262
December	15,428,125	326,233	15,101,892	185	288	288	287
1920—January	12,273,653	886,778	11,386,875	140	293	293	297
February	10,581,487	657,821	9,923,666	121	269	268	273
March	16,880,893	717,012	16,165,997	198	272	272	272
April	13,721,573	326,648	13,394,925	164	296	298	290
May	25,887,665	569,157	25,318,508	310	309	310	308
June	21,753,624	459,784	21,295,341	261	295	298	292
July	34,654,740	219,121	34,436,519	421	287	289	282
August	32,550,164	444,576	32,105,588	393	257	258	256
September	34,994,181	1,907,899	33,086,741	405	257	255	261
October	43,033,442	10,537,121	32,499,130	398	222	219	221
November	30,988,540	10,430,080	20,560,138	252	189	188	193
December	30,179,555	12,295,690	18,051,836	222	182	180	186
1921—January	27,104,626	5,496,850	21,767,720	267	188	185	196
February	23,075,208	5,314,170	17,813,176	218	178	175	188
March	20,763,041	3,456,131	17,409,469	213	169	164	180
April	24,801,352	4,986,552	20,389,448	250	147	141	163
May	31,623,973	2,117,997	29,563,312	362	160	154	177
June	32,192,279	118,099	38,058,620	429	157	148	181

[3] Exports after subtracting imports and adding reexports. For fiscal years beginning July 1. Wheat reduced to wheat equivalent at the rate of 4⅓ bushels to a barrel.

[5] Index based upon price of wheat; No. 1 northern spring, Minneapolis; No. 1 northern spring, Chicago; No. 2 red winter, Chicago; No. 2 hard winter, Kansas City; Blustena, Portland.

[6] Index based on prices of winter patent, Kansas City; winter straights, Kansas City; standard patents, Minneapolis; second patents, Minneapolis.

Digitized by Google

CORN.

The following table gives the actual and relative production of corn on the 1909–1913 base:

TABLE G–8.—*Production of corn.*

[Base: 1909–1913=100.]

[Source: Yearbook of Department of Agriculture, 1920.]

Years.	Actual production, bushels (000 omitted).	Relative production, bushels.	Years.	Actual production, bushels (000 omitted).	Relative production, bushels.
1909	2,552,190	94	1915	2,994,793	111
1910	2,886,260	107	1916	2,566,927	95
1911	2,531,488	93	1917	3,065,233	113
1912	3,124,746	115	1918	2,502,665	92
1913	2,446,988	90	1919	2,858,509	106
1914	2,672,804	99	1920	3,232,367	119

The actual and relative exports and imports of corn and corn meal and the weighted index of corn prices is shown in the following table, G–9.

TABLE G–9.—*The actual and relative exports, imports, reexports, and net exports of corn and corn meal,*[1] *1909–1921.*

[1909–1913=100.]

[Source: Commerce Reports.]

Years and months.	Exports.		Imports.		Reexports (bushels).	Net exports.[2]		Weighted index number of wholesale prices of corn (monthly average 1910–1914 =100).[3]
	Bushels.	Relative.	Bushels.	Relative.		Bushels.	Relative.	
1909–10	37,520,520	91	.....	.....	.....	37,520,520	97	.....
1910–11	65,614,522	159	.....	.....	.....	65,614,522	170	.....
1911–12	41,797,291	101	53,425	1	77	41,743,943	108	.....
1912–13	50,780,143	123	903,062	20	35,887	49,912,968	129	.....
1913–14	10,725,319	26	12,367,369	278	4,011	−1,637,539	.....	.....
1914–15	50,668,303	123	9,897,939	223	46,938	40,817,302	106	.....
1915–16	39,896,928	97	5,208,497	117	74,752	34,763,183	113	.....
1916–17	66,753,294	162	2,267,399	51	608,688	65,094,683	169	.....
1917–18	49,073,263	119	3,196,420	72	73,540	45,950,382	119	.....
1918–19	23,018,822	56	3,311,211	75	10,712	19,718,323	51	.....
1919–20	16,728,746	41	10,229,249	230	62,818	6,562,315	17	.....
1920–21	70,905,781	172	5,743,384	129	.....	65,162,397	169	.....
1919.								
January	2,344,399	68	18,607	5	.....	2,325,792	72	220
February	1,618,434	47	8,002	2	.....	1,610,432	50	204
March	1,391,476	40	20,607	6	.....	1,370,869	42	233
April	1,144,801	33	13,399	4	.....	1,131,402	35	254
May	1,226,913	36	1,740,471	470	.....	− 513,558	.....	280
June	1,257,907	37	1,353,763	366	2,162	− 93,694	.....	280
July	739,048	22	1,988,247	537	5,200	−1,243,998	.....	304
August	1,101,302	32	949,642	257	28,267	179,827	6	306
September	1,371,857	40	1,959,102	529	11,317	− 598,562	.....	245
October	1,069,645	31	1,208,759	327	6,804	− 145,918	.....	221
November	1,085,406	32	1,350,746	365	11,221	− 276,561	.....	237
December	1,651,181	48	601,372	162	.....	1,049,809	32	232

[1] Corn meal reduced to bushels of corn at the rate of 4 bushels to 1 barrel.

[2] When there were net imports during the base period, the net imports were subtracted from the net exports and the remainder divided by 5 to get the average net export for the period.

[3] Weighted index of monthly average wholesale prices of corn.

Digitized by Google

TABLE G-9.—*The actual and relative exports, imports, reexports, and net exports of corn and corn meal, 1909–1921*—Continued.

Years and months.	Exports.		Imports.		Reexports (bushels).	Net exports.		Weighted index number of wholesale prices of corn (monthly average 1910–1914 =100).
	Bushels.	Relative.	Bushels.	Relative.		Bushels.	Relative.	
1920.								
January	2,320,661	67	408,293	110	.....	1,912,368	59	239
February	1,925,375	56	156,945	42	1,030	1,769,460	54	230
March	1,992,412	58	139,429	38	.....	1,852,983	57	251
April	1,336,380	40	291,465	79	.....	1,044,915	32	271
May	992,195	29	238,045	64	9	754,159	23	317
June	1,143,232	33	937,204	253	.....	206,028	6	294
July	1,294,479	37	2,343,445	633	.....	1,048,966	.....	246
August	1,292,915	37	1,299,418	351	.....	6,503	0.2	245
September	2,516,718	73	1,066,449	288	4,442	1,454,711	45	209
October	2,046,352	60	608,064	164	18,783	1,457,071	45	141
November	2,167,466	63	126,951	34	399,233	2,439,748	75	128
December	3,625,751	106	126,133	34	519,077	4,018,695	124	120
1921.								
January	5,753,114	167	8,226	2	25,529	5,770,417	178	108
February	8,561,054	249	8,256	2	34,047	8,586,845	264	106
March	13,680,949	398	7,379	2	2	13,673,572	421	103
April	10,558,336	307	41,707	11	7	10,516,636	324	92
May	8,694,457	253	52,100	14	.....	8,642,356	266	98
June	12,138,887	353	17,615	5	.....	12,121,272	373	98

The net exports of corn and corn meal combined averaged about 37,000,000 bushels in the 10 years ending June 30, 1920. The net exports of the fiscal year 1921 were 65,000,000 bushels, about two-fifths more than the 10 year average. The net exports of corn were large during the period beginning September, 1920, and ending with June 30, 1921, but were not of sufficient proportions, as compared with the total production, to materially influence the decline in the price of corn as compared with other farm crops. The price of corn in June, 1921, was below 1910–1914 average. This low price was no doubt due to the large crop in 1920 and the general depression which affected the price of all commodities.

OATS.

The following table, G–10, shows the actual and relative production of oats on 1909–1913 base:

TABLE G-10.—*Actual and relative production of oats.*

[Base, 1909–1913=100.]

[Source: Yearbook of Department of Agriculture, 1920.]

Years.	Actual production (bushels) (000 omitted).	Relative production (bushels).	Years.	Actual production (bushels) (000 omitted).	Relative production (bushels)
1909	1,007,143	89	1915	1,549,030	137
1910	1,186,341	105	1916	1,251,837	111
1911	922,298	82	1917	1,592,740	141
1912	1,418,337	125	1918	1,538,124	136
1913	1,121,768	99	1919	1,231,754	109
1914	1,141,060	101	1920	1,526,055	135

Digitized by Google

The actual and relative exports and imports of oats and oatmeal are shown in the following table, G–11.

TABLE G–11.—*The actual and relative exports, imports, reexports, and net exports of oats and oat meal, 1909–1921.*

[1909–1913=100.]

[Source: Commerce Reports.]

Years and months.	Exports.		Imports.		Reexports.	Net exports.[1]	
	Bushels.	Relative.	Bushels.	Relative.	Bushels.	Bushels.	Relative.
1909–10	2,494,772	27	1,034,511	19	218,287	1,678,548	44
1910–11	2,733,291	29	107,818	2	1,504	2,627,477	69
1911–12	2,218,963	24	2,622,357	49	4,750	398,643	.....
1912–13	36,287,765	390	723,899	14	4,750	35,558,616	928
1913–14	2,693,460	29	22,273,624	416	726,297	20,306,460	.....
1914–15	100,372,929	1,081	630,722	12	218,928	99,961,135	2,607
1915–16	98,771,294	1,064	665,314	12	407,750	98,513,730	2,570
1916–17	94,722,465	1,020	761,644	14	82,862	94,043,683	3,166
1917–18	123,893,056	1,334	2,591,077	48	96,970	121,398,949	2,808
1918–19	108,218,292	1,165	551,355	10	500	107,667,437	960
1919–20	42,845,638	461	6,043,835	113	6,335	36,808,138	138
1920–21	9,074,576	98	3,795,638	71	.....	5,278,938	.....
1919.							
January	10,992,254	1,420	10,985	2	.....	10,981,269	3,437
February	6,589,121	845	5,664	1	.....	6,583,457	2,045
March	3,198,479	413	4,993	1	.....	3,193,486	999
April	2,986,066	386	11,608	3	.....	2,974,458	931
May	4,465,792	577	277,671	62	.....	4,188,121	1,301
June	6,723,976	869	115,913	26	.....	6,608,063	2,068
July	5,407,811	699	39,270	9	.....	5,368,540	1,680
August	6,278,400	811	30,386	7	.....	6,248,014	1,956
September	7,006,694	906	16,583	4	.....	6,990,111	2,188
October	4,978,907	643	20,424	4	.....	4,958,483	1,552
November	4,090,236	529	11,680	3	.....	4,078,555	1,277
December	4,191,204	542	63,951	14	.....	4,127,253	1,292
1920.							
January	2,173,522	281	311,413	70	.....	1,862,109	583
February	1,584,734	205	410,145	92	.....	1,174,589	368
March	3,326,299	430	722,355	162	1,000	2,604,944	815
April	1,463,488	189	876,265	196	50,000	637,223	196
May	1,686,590	218	2,104,407	471	5,335	412,481	.....
June	657,752	85	1,436,956	322	.....	779,204	.....
July	495,770	64	353,915	79	500	142,355	44
August	720,349	93	173,856	39	500	546,993	177
September	969,141	125	45,066	10	.....	924,075	289
October	774,387	100	10,926	2	.....	763,461	239
November	1,152,727	149	62,845	14	1,250	1,091,132	595
December	1,307,273	169	220,052	49	120	1,087,341	340
1921.							
January	976,841	126	201,200	45	200,027	975,667	305
February	574,575	74	190,839	43	37,548	421,284	132
March	413,194	53	409,209	92	.....	3,985	0.9
April	493,889	64	887,271	199	.....	393,382	.....
May	627,509	81	1,055,346	237	.....	427,837	.....
June	568,619	74	298,351	67	.....	270,268	85

[1] When there were net imports during the base period, the net imports were substracted from the net exports and the remainder divided by five to get the average net export for the period.

Exports of oats and oat meal exceeded imports in the fiscal year 1920–21 by only 5,278,938 bushels. The net exports of oats and ota meal were relatively less in 1920–21 than in any year since 1914–15. Production of oats in 1920 was about 400,000,000 bushels above the average production of 1909–1913.

Digitized by Google

RYE.

The following table, G–12, shows the production of rye and the relative production on 1909–1913 base. The production of rye in 1920, which was 69,000,000 bushels, was considerably above the 1910–1914 average and below the crop of 1918–19.

TABLE G–12.—*Rye.*

[Base: 1909–1913=100.]

[Source: Yearbook of Department of Agriculture, 1920.]

Years.	Actual production (bushels) (000 omitted).	Relative production (bushels).	Years.	Actual production (bushels) (000 omitted).	Relative production (bushels).
1909	29,520	85	1915	54,050	155
1910	34,897	100	1916	48,862	140
1911	33,119	95	1917	62,933	180
1912	35,664	102	1918	91,041	261
1913	41,381	119	1919	88,909	255
1914	42,779	123	1920	69,318	199

The following table, G–13, shows the actual and relative exports of rye and rye flour by fiscal years beginning 1909–10, and by months beginning with January, 1919:

TABLE G–13.—*The actual and relative exports of rye and rye flour,*[1] *1909–1921.*

[1909–1913=100.]

[Source: Commerce Reports.]

By years and months.	Actual exports (bushels).	Relative exports.	Weighted index number of wholesale price of rye and rye flour.	By years and months.	Actual exports (bushels).	Relative exports.	Weighted index number of wholesale price of rye and rye flour.
1909–10	242,282	27	.....	1920.			
1910–11	40,123	5	100	January	1,115,793	1,508	228
1911–12	31,384	3	116	February	2,132,806	2,882	203
1912–13	1,854,738	209	104	March	4,646,554	6,278	226
1913–14	2,272,692	256	83	April	5,076,184	6,859	261
1914–15	13,026,778	1,467	95	May	10,280,085	13,889	282
1915–16	15,250,151	1,717	137	June	6,382,615	8,624	286
1916–17	13,703,499	1,543	142	July	7,890,846	10,661	286
1917–18	17,186,417	1,935	240	August	5,651,853	7,636	252
1918–19	36,467,450	4,106	249	September	2,650,494	3,580	249
1919–20	41,530,961	4,676	199	October	2,936,512	3,968	223
1920–21	47,337,466	5,329	243	November	4,855,431	6,559	206
1919.				December	5,634,017	7,612	210
January	1,206,035	1,629	209	1921.			
February	2,610,131	3,526	180	January	5,480,204	7,404	218
March	4,198,922	5,673	204	February	3,835,984	5,183	196
April	3,250,404	4,391	229	March	1,764,689	2,385	189
May	7,992,856	10,799	207	April	2,127,141	2,874	175
June	9,339,074	12,617	194	May	2,054,561	2,776	189
July	2,370,918	3,203	199	June	2,455,958	3,318	168
August	886,248	1,197	199	July	.....	.....	161
September	3,141,676	4,245	183				
October	1,215,080	1,641	179				
November	1,770,282	2,391	181				
December	2,512,720	3,395	216				

[1] There were no imports or reexports.

Digitized by Google

Exports of rye have increased greatly in recent years, particularly since 1914. Exports of rye in the fiscal year 1920–21 were larger than those of any preceding year. The price of rye reached the peak in June–July, 1920, and fell rapidly after that month. Exports of rye reached their peak in May, 1920, and after that month fell rapidly until December, 1920, and January and February, 1921, when there was a slight recovery, followed by a further decline. In general, the course of the price of rye followed very closely the course of the price of wheat; the course of exports of rye followed very closely the course of exports of wheat, and the general conclusions applicable to wheat are applicable to rye. In other words, the price of rye like the price of wheat has apparently been sustained by large exports above the price of rice and other grain and farm products.

RICE.

The following table, G–14, shows the production of rice and the relative production on 1909–1913 base.

TABLE G–14.—*Rice.*

[Base: 1909–1913=100.]

[Source: Year Book of the Department of Agriculture, 1920.]

Year.	Actual production (bushels, 000 omitted).	Relative production (bushels).	Year.	Actual production (bushels, 000 omitted).	Relative production (bushels).
1909	21,839	91	1915	28,947	121
1910	24,510	102	1916	40,861	170
1911	22,934	95	1917	34,739	145
1912	25,054	104	1918	38,606	161
1913	25,744	107	1919	42,790	178
1914	23,649	98	1920	53,710	224

The production of rice in 1920 was larger than in any preceding year and greatly exceeded the 1909–1913 average. Exports of rice, however, fell off 43,000,000 bushel as compared with 1919–20, while imports fell off 83,000,000 bushel.

Table G–15, page 104, gives the actual and relative exports, imports, reexports, net imports, and net exports of rice on 1909–1913 base.

Digitized by Google

TABLE G–15.—*The actual and relative exports, imports, reexports, and net exports and net imports of rice, 1909–1921.*

[1909–1913=100.]

[Commerce Reports.]

Years and months.	Exports.		Imports.		Reexports.	Net exports.	Net imports.	Price of rice, Honduras, head per pound.	Relative price of rice, Honduras, head per pound.
	Pounds.	Relative.	Pounds.	Relative.					
					Pounds.	*Pounds.*	*Pounds.*		
1909–10	7,049,597	38	225,400,544	99	8,160,452	.....	210,190,495	.....	.....
1910–11	15,575,271	84	208,774,795	92	6,192,579	.....	187,006,945	$0.055	100
1911–12	26,797,535	145	190,063,331	84	10,410,424	.....	152,855,372	.050	91
1912–13	24,801,280	134	222,103,547	98	12,681,158	.....	184,621,109	.055	100
1913–14	18,223,264	99	290,194,917	128	17,787,031	.....	254,184,622	.055	100
1914–15	75,448,635	408	277,191,472	122	9,186,431	.....	192,556,406	.059	107
1915–16	120,695,213	653	264,324,005	116	71,794,527	.....	71,834,265	.048	87
1916–17	181,371,560	981	216,048,858	95	44,356,242	9,678,944	.....	.045	82
1917–18	196,363,268	1,062	456,058,608	201	92,301,857	.....	167,393,483	.065	118
1918–19	193,128,001	1,045	363,726,263	160	216,253,657	45,655,395	.....	.089	162
1919–20	483,385,259	2,614	179,919,961	79	96,554,804	400,020,102	.....	.106	193
1920–21	440,855,398	2,384	96,804,612	43	61,599,311	344,050,786	.....	.....	.....
1919.									
January	34,691,941	2,252	7,327,344	39	4,376,304	31,740,901	.....	.091	165
February	12,743,749	827	23,268,804	123	8,012,539	.....	2,512,516	.091	165
March	24,741,711	1,605	15,502,872	82	8,553,539	17,792,378	.....	.091	165
April	19,410,961	1,260	10,551,357	56	11,040,157	19,899,761	.....	.089	162
May	30,394,068	1,973	20,977,132	111	15,506,976	24,923,912	.....	.088	160
June	32,881,459	2,134	9,165,689	48	19,667,209	43,382,979	.....	.091	165
July	26,706,910	1,733	17,933,279	95	6,195,441	14,969,072	.....	.117	213
August	42,524,944	2,760	31,528,801	166	9,570,054	20,566,197	.....	.143	260
September	33,455,622	2,106	14,274,623	75	6,817,859	24,998,858	.....	.127	231
October	25,185,232	1,635	9,037,282	48	12,054,861	28,202,811	.....	.121	220
November	33,943,125	2,203	5,732,547	30	6,730,916	34,941,494	.....	.127	231
December	61,195,849	3,972	9,296,394	49	11,173,896	63,073,351	.....	.124	225
1920.									
January	59,079,945	3,834	6,861,001	36	8,415,069	60,634,013	.....	.127	231
February	56,422,757	3,662	9,728,183	51	8,471,749	55,166,323	.....	.128	233
March	62,260,513	4,041	12,000,384	63	3,409,449	53,669,578	.....	.125	227
April	40,128,989	2,604	26,065,840	138	4,554,163	18,617,312	.....	.123	224
May	29,641,854	1,924	20,214,228	107	10,694,856	20,122,482	.....	.122	222
June	13,839,519	898	16,291,098	86	8,470,491	6,018,912	.....	.123	224
July	17,818,104	1,156	13,740,536	73	10,513,060	14,590,628	.....	.125	227
August	10,322,640	670	18,926,307	100	4,878,838	.....	3,724,829	.102	185
September	4,599,974	299	6,704,861	35	4,928,447	2,823,560	.....	.095	173
October	12,269,590	796	2,154,246	11	8,471,352	18,586,696	.....	.079	144
November	33,676,275	2,186	4,694,592	25	6,430,605	35,412,288	.....	.068	124
December	52,556,395	3,411	4,573,553	24	2,809,545	50,792,387	.....	.066	120
1921.									
January	39,902,043	2,590	7,463,276	39	5,873,821	38,312,588	.....	.046	84
February	39,032,585	2,533	5,373,791	28	4,060,595	37,719,389	.....	.048	87
March	45,579,217	2,958	5,153,319	27	2,249,445	42,675,343	.....	.045	82
April	58,907,643	3,823	8,903,235	47	1,661,284	51,665,692	.....	.040	73
May	52,425,254	3,402	9,086,807	48	2,341,858	45,680,305	.....	.035	64
June	73,769,678	4,788	10,000,089	53	.....	63,768,689	.....	.039	71

The net exports of rice in 1920–21 were 56,000,000 bushels less than in 1919–20. The price of rice reached its maximum in August, 1919, and declined steadily from that time on until June, 1921. On the whole, exports of rice have been fairly well maintained.

Digitized by Google

ALL GRAINS.

The production of grain—oats, wheat, barley, rye, and buckwheat—combined in 1920, was, as shown in Table F–3, on page 87, relatively above the average, and in the last 10 years was exceeded only in 1915 and 1912. While this production was clearly not sufficient to account for the perpendicular decline which occurred in the price of grain in the latter half of 1920 and the first half of 1921, it doubtless contributed somewhat to that decline.

The following table, G–16, gives the exports and imports of all grains for 1909–1921, and by months from January, 1919, to June, 1921.

TABLE G–16.—*The actual and relative export, import, reexport, and net export of all grains,*[1] *1909–1921.*

[1909–1913=100.]

[Source: Commerce Reports.]

Years and months.	Exports.		Imports.		Reexports.	Net exports.	
	Bushels.	Relative.	Bushels.	Relative.	Bushels.	Bushels.	Relative.
1909–10	131,953,437	83	1,850,127	20	354,947	130,458,257	87
1910–11	148,099,041	93	1,253,876	14	2,901	146,848,066	98
1911–12	95,162,071	60	3,390,278	37	6,118	91,777,911	61
1912–13	249,338,946	157	2,909,000	31	123,674	246,553,619	165
1913–14	167,927,068	106	37,024,530	399	1,482,992	132,385,529	88
1914–15	523,287,508	330	11,244,030	121	453,837	512,497,314	343
1915–16	424,508,559	268	13,061,462	141	1,103,743	412,580,840	276
1916–17	395,134,263	249	27,953,928	301	755,498	367,935,833	246
1917–18	349,016,747	220	37,002,710	398	582,027	312,596,063	209
1918–19	478,729,155	302	15,151,157	163	1,513,646	465,091,644	311
1919–20	347,723,445	220	21,768,600	234	217,819	261,172,663	175
1920–21	513,867,265	324	66,937,024	721	.....	446,930,241	299
1919.							
January	37,686,105	285	835,591	108	.....	36,850,514	296
February	27,062,224	205	436,144	56	.....	26,626,080	214
March	31,192,807	236	409,634	53	.....	30,783,173	247
April	41,969,785	318	1,076,666	139	450	40,893,569	329
May	44,863,037	340	3,556,834	462	3,150	41,309,453	331
June	56,046,358	424	3,373,837	436	2,999	39,675,530	318
July	27,630,592	209	2,415,790	312	5,205	25,220,006	202
August	35,090,224	266	1,012,190	131	28,267	34,106,300	274
September	41,060,188	311	2,121,013	274	54,954	38,994,129	313
October	30,825,831	233	1,802,220	233	100,804	29,124,414	233
November	31,825,838	241	1,775,877	230	11,221	30,061,177	241
December	24,217,134	183	991,556	128	.....	23,225,578	186
1920.							
January	19,147,948	145	1,606,484	208	.....	17,541,464	140
February	17,178,792	130	1,224,911	158	1,030	15,954,911	128
March	28,289,703	214	1,578,796	204	3,116	28,292,819	227
April	22,484,664	170	1,494,378	193	50,000	21,040,286	168
May	39,481,297	299	2,911,609	377	5,344	36,575,032	294
June	30,494,237	231	2,833,944	366	1,503	27,661,796	222
July	45,348,478	343	2,916,481	377	14,000	42,445,997	340
August	42,591,813	323	1,917,850	248	500	40,674,472	326
September	43,196,906	327	3,019,414	392	4,902	40,182,394	322
October	51,305,477	388	11,156,111	1,442	21,600	40,170,966	322
November	40,786,898	309	10,619,876	1,372	402,162	30,569,184	245
December	43,266,237	328	12,641,875	1,634	687,669	31,312,081	251
1921.							
January	42,305,955	320	5,706,276	737	385,510	36,985,189	297
February	37,371,309	283	5,508,265	712	143,734	32,006,778	257
March	38,189,276	289	3,872,719	501	102,561	34,419,118	276
April	38,611,765	292	5,915,530	765	574,655	33,270,887	267
May	43,458,725	329	3,225,443	417	57,336	40,290,618	323
June	48,727,396	369	434,065	56	.....	48,293,331	387

[1] Includes corn and corn meal, wheat and wheat flour, rye and rye flour, oats and oatmeal, barley and barley flour.

Digitized by Google

Exports of all grains were relatively high for the fiscal year 1920–21; in fact were higher than in any of the preceding 10 years except 1918–19 and 1914–15. This relatively large export is accounted for by the sustained exports of wheat and rye. It is notable, however, that exports of all grains reached their peak in July, 1920, and from that time declined more or less steadily until May, 1921.

On the whole, it seems probable that the first influence reacting to depress prices of grains was the falling off of exports, beginning in May, June, and July, 1920.

COTTON.

The following table, G–17, gives the production in bales and the relative production of cotton by years from 1890 to 1920.

It will be noted that the crop of 1920, while relatively below the 1910–1914 average, was larger than any crop since 1914.

TABLE G–17.—*Cotton.*

[1910–1914=100.]

Year.	Production in bales.	Relative production (1910–1914=100).	Year.	Production in bales.	Relative production (1910–1914=100).
1890	8,674,000	61	1906	13,274,000	93
1891	9,018,000	63	1907	11,107,000	78
1892	6,664,000	47	1908	13,242,000	93
1893	7,493,000	53	1909	10,005,000	70
1894	9,476,000	66	1910	11,609,000	81
1895	7,161,000	50	1911	15,693,000	110
1896	8,533,000	60	1912	13,703,000	96
1897	10,898,000	76	1913	14,156,000	99
1898	11,189,000	78	1914	16,135,000	113
1899	9,345,000	66	1915	11,192,000	78
1900	10,123,000	71	1916	11,450,000	80
1901	9,510,000	67	1917	11,302,000	79
1902	10,631,000	75	1918	12,041,000	84
1903	9,851,000	69	1919	11,421,000	80
1904	13,438,000	94	1920	12,987,000	91
1905	10,575,000	74			

The following table, G–18, gives the actual and relative exports and imports of cotton by years 1909–10 to 1920–21, and by months from January, 1919, to June, 1921, combined with an index of the actual and relative prices of middling upland cotton at New York:

TABLE G–18.—*Exports and imports of unmanufactured cotton.*

[Base: 1910–1914.]

Year and month.	Domestic exports.	Imports	Foreign exports.	Net exports.	Relative domestic exports.	Relative net imports.	Relative net exports.	Actual price middling upland, New York.	Relative price.
	Bales.	*Bales.*	*Bales.*	*Bales.*				*Pound.*	
1909–10	6,263,293	172,075	11,063	6,102,281	72	78	72	.....	.....
1910–11	7,829,036	227,536	4,665	7,606,165	90	103	90	$0.151	$0.117
1911–12	10,675,445	219,560	2,353	10,458,238	123	99	124	.130	.101
1912–13	9,124,591	227,645	1,742	8,898,688	105	103	105	.115	.89
1913–14	9,521,881	260,988	3,996	9,264,889	110	118	109	.128	.99
1914–15	8,807,157	382,286	27,141	8,452,012	101	172	100	.121	.94
1915–16	6,168,140	437,574	18,853	5,749,419	71	198	68	.102	.79
1916–17	6,176,162	291,957	3,922	5,888,127	71	132	70	.145	.112
1917–18	4,641,023	221,216	3,598	4,423,405	53	100	52	.235	.182
1918–19	5,525,893	201,585	4,500	5,328,808	64	91	63	.318	.247
1919–20	7,087,487	700,214	16,983	6,404,256	82	316	76	.325	.252
1920–21	5,409,102	251,878	.....	5,157,224	62	114	61	.339	.263

Digitized by Google

TABLE G–18.—*Exports and imports of unmanufactured cotton*—Continued.

Year and month.	Domestic exports.	Imports.	Foreign exports.	Net exports.	Relative domestic exports.	Relative net imports.	Relative net exports.	Actual price middling upland, New York.	Relative price.
1919.	*Bales.*	*Bales.*	*Bales.*	*Bales.*				*Pound.*	
January	658,143	11,194	593	647,542	91	60	92	$0.296	$0.229
February	449,523	9,640	406	440,289	62	52	62	.263	.204
March	504,239	15,561	102	488,780	70	85	69	.273	.212
April	411,916	36,463	479	375,932	57	198	53	.290	.225
May	444,718	36,812	107	408,013	62	200	58	.309	.240
June	690,189	17,269	147	673,047	95	94	95	.328	.254
July	528,902	19,403	123	509,622	73	105	72	.351	.272
August	479,058	14,070	364	465,352	66	76	66	.320	.248
September	236,694	54,342	154	182,506	33	295	26	.311	.241
October	352,231	35,281	291	317,241	49	192	45	.355	.275
November	924,751	52,088	55	872,718	128	283	124	.395	.306
December	876,843	48,594	1,095	829,344	121	264	118	.394	.305
1920.									
January	929,671	104,485	514	825,700	129	565	117	.393	.305
February	640,320	123,880	2,221	518,661	88	674	74	.388	.301
March	794,460	133,727	6,708	667,441	110	726	95	.414	.321
April	546,125	69,357	1,770	478,538	75	374	68	.424	.329
May	364,904	15,767	1,684	350,821	50	87	50	.413	.320
June	241,449	19,635	621	222,435	33	108	31	.393	.305
July	211,841	28,088	443	183,296	29	157	26	.410	.318
August	146,668	23,106	1,824	125,386	20	125	18	.360	.279
September	228,068	20,004	3,700	211,764	32	108	30	.301	.233
October	583,725	13,825	1,356	571,256	81	76	81	.226	.175
November	683,323	22,513	1,870	662,680	95	122	94	.190	.147
December	788,578	25,890	271	762,959	110	141	108	.155	.120
1921.									
January	606,381	24,024	879	582,236	84	130	82	.167	.129
February	493,426	28,055	1,491	466,862	68	152	66	.139	.108
March	375,180	27,282	1,482	349,380	52	146	49	.118	.91
April	319,933	18,731	717	301,919	44	103	43	.121	.94
May	477,389	10,542	1,552	468,399	66	57	66	.129	.100
June	495,590	10,105	.....	485,485	69	54	69	.120	.93
July	.....	.....	.....	.....	.....	.....	.....	.124	.96

Exports of cotton have been declining with more or less regularity since 1912 and in 1920–21 were less than in any preceding year since 1917–18. The peak of net exports of cotton since January, 1919, was reached in November, 1919, since which time it has declined very rapidly. The peak in price of cotton as indicated by the index in the table was reached in April, five months after the peak of exports was reached. From April, 1920, to June, 1921, which is the last month covered by the table, the price of cotton has declined very rapidly in very close relation to the decline in cotton exports.

Exports of cotton declined in marked contrast to the increase in exports of wheat and wheat flour, and the price of cotton fell relatively below the price of wheat and wheat flour.

The rapid decline in exports was apparently a major factor in bringing about the declining price. To this factor, however, must be added declining domestic consumption in the United States as indicated by Table G–19, on page 108.

Digitized by Google

TABLE G–19.—*The consumption of cotton*[1] *in the United States, 1913–21.*

[Service: Cotton Production and Distribution Bulletin, United States Department of Commerce.]

Date.	Bales.	Date.	Bales.	Date.	Bales.
1913	465,000	1919—Continued.		1920—Continued.	
1914	454,000	June	474,000	June	555,000
1915	501,000	July	510,000	July	526,000
1916	552,000	August	497,000	August	483,000
1917	568,000	September	491,000	September	458,000
1918	515,000	October	556,000	October	400,000
1919	493,000	November	491,000	November	332,000
1920	487,000	December	511,000	December	295,000
1919.		1920.		1921.	
January	557,000	January	592,000	January	366,000
February	433,000	February	516,000	February	396,000
March	433,000	March	576,000	March	438,000
April	476,000	April	567,000	April	409,000
May	488,000	May	541,000		

[1] Running bales, excluding linters.

Cotton consumption in 1920 was lower than in any year since 1915. Cotton consumption reached its highest point in January, 1920, and from that time declined rapidly until December, 1920, since which time it has risen steadily.

The consumption of cotton in the factories of 12 leading manufacturing states was as follows for each year from 1913 to 1920, inclusive:

TABLE G–20.—*Average monthly cotton consumption in typical mills in the United States, by years.*

	Bales.		Bales.
1913	465,000	1917	568,000
1914	454,000	1918	515,000
1915	501,000	1919	493,000
1916	552,000	1920	487,000

The production of manufactured cotton goods in United States reached its peak in 1917 and has declined in succeeding years, manufactured cotton goods in 1920 being markedly below production in 1917.

The following table, G–21, shows the world's supply and consumption of cotton by crop years from 1910–11 to 1919–20:

TABLE G–21.—*Supply and consumption of cotton, 1910–1920, linters excluded, in bales of 500 pounds each, gross weight.*

Season.	World commercial crop.[1]	World total consumption.[2]	World supply at end of season.	Season ending—
1919–20	17,964,000	17,555,000	5,846,000	July 31, 1920
1918–19	16,962,000	15,689,000	5,436,000	July 31, 1919
1917–18	16,798,000	17,100,000	4,163,000	July 31, 1918
1916–17	18,023,000	18,925,000	4,477,000	July 31, 1917
1915–16	17,371,000	20,344,000	5,379,000	July 31, 1916
1914–15	19,579,000	18,747,000	8,352,000	Aug. 31, 1915
1913–14	20,915,000	19,858,000	7,519,000	Aug. 31, 1914
1912–13	19,198,000	19,544,000	6,463,000	Aug. 31, 1913
1911–12	20,530,000	18,566,000	6,809,000	Aug. 31, 1912
1910–11	16,863,000	16,750,000	4,845,000	Aug. 31, 1911

[1] United States, India, Egypt, and other countries from which reliable information can be secured.
[2] Great Britain, European Continent, United States, India, Japan, and Canada.

Digitized by Google

It appears from this table that the world's consumption of cotton has markedly declined since 1915–16, while the world production has remained on about the 1915–16 level.

The taking of American cotton by foreign spinners from August 1 to April 29 was but little over half in 1920–21 the amount taken in 1913–14,[1] as shown in the following table:

TABLE G–22.—*Foreign spinners' takings of American cotton from Aug. 1 to Apr. 29.*

Countries.	1920–21	1919–20	1913–14
	Bales.	*Bales.*	*Bales.*
Great Britain	1,346,000	2,315,000	2,389,000
Continent	2,182,000	1,852,000	3,843,000
Japan and Mexico	400,000	752,000	370,000
Total	3,928,000	4,919,000	6,602,000

While British spinners were taking[1] more American cotton in the year 1920–21 than other cotton, their total takings of American cotton in the nine months ending in April, 1921, were about half their takings in the same period in 1913–14.

TABLE G–23.—*Deliveries to spinners in Great Britain from Aug. 1 to Apr. 29.*

Descriptions.	1920–21	1919–20	1913–14
	Bales.	*Bales.*	*Bales.*
American	1,346,000	2,261,000	2,389,000
Brazilian	31,000	21,000	176,000
Egyptian	157,000	370,000	347,000
Peruvian	62,000	163,000	133,000
West Indian, etc	3,700	3,800	10,000
African	16,000	28,200	37,000
East Indian, etc	54,300	84,000	52,000
Total	1,670,000	2,931,000	3,144,000

WOOL.

Table G–24 gives the annual actual domestic production of wool and the relative production on the 1910–1914 base for the years 1910 to 1920, inclusive

TABLE G–24.—*Production of wool.*

[1910–1914=100.]

[Source: Department of Commerce; Statistical Abstract, 1920.]

Years.	Production (pounds).	Relative.	Years.	Production (pounds).	Relative.
1910	321,362,750	105	1916	288,490,000	94
1911	318,547,900	104	1917	281,892,000	92
1912	304,043,400	99	1918	298,870,000	98
1913	296,175,300	97	1919	313,638,000	102
1914	290,192,000	95	1920	308,507,000	101
1915	285,726,000	93			

[1] The Market Reporter, United States Department of Agriculture, May 28, 1921, p 351.

Digitized by Google

The production of wool in the United States in 1920 was slightly above the 1910–1914 average, and slightly below the crop of 1919. The following table, G–25, exhibits the actual exports, imports, reexports, and net imports of wool and the relative imports and net imports, the price per pound and the relative price by years from 1909 to 1920, and by months from January, 1919, to August, 1921.

TABLE G–25.—*The actual and relative export, import, reexport, and net import of wool, January, 1909, to August, 1921.*

[Source: Bureau of Foreign and Domestic Commerce.]

Years and months.	Exports, pounds.	Imports.		Reexports, pounds.	Net imports.		Farm price per pound.[1]	
		Pounds.	Relative (1909–1913=100).		Pounds.	Relative (1909–1913=100).	Price per pound (cents).	Relative price (1910–1914=100).
1909	(2)	312,131,171	150	1,083,682	311,047,489	153	.....	.....
1910	(2)	180,134,981	87	9,056,226	171,078,755	84	20.7	116
1911	(2)	155,922,510	75	3,510,715	152,411,795	75	15.9	89
1912	(2)	238,118,350	115	1,816,258	236,302,092	116	18.0	101
1913	(2)	151,813,703	73	3,859,929	147,953,774	73	16.7	94
1914	(2)	260,164,525	125	6,425,922	253,738,603	125	17.6	99
1915	(2)	412,721,292	199	2,007,951	410,623,341	202	22.5	126
1916	3,918,992	449,189,924	216	2,155,776	443,115,156	217	27.6	155
1917	1,827,324	420,994,547	203	1,421,028	417,746,195	205	47.2	265
1918	406,944	453,727,372	219	515,411	452,805,017	222	58.0	326
1919	2,839,980	445,892,834	215	5,624,208	437,428,646	215	51.0	287
1920	8,845,270	259,617,641	125	12,635,929	238,136,442	117	38.1	214
1919.								
January	26,813	28,140,834	163	.....	28,114,021	166	55.2	310
February	75,088	20,415,225	118	72,899	20,267,238	119	51.1	287
March	95,426	21,436,636	124	353,352	20,987,858	124	51.3	288
April	107,568	36,781,569	213	.....	36,674,001	216	47.9	269
May	17,261	44,897,920	259	.....	44,880,659	264	48.0	270
June	29,400	56,282,110	327	140,371	56,112,339	330	50.5	284
July	151,364	36,577,684	211	146,735	36,279,585	214	51.8	291
August	203,535	50,074,655	289	200,295	49,670,825	293	52.2	293
September	270,568	49,036,804	283	349,649	48,416,587	285	51.3	288
October	458,327	45,066,633	260	374,148	44,234,158	261	50.6	284
November	749,379	38,174,490	221	1,027,568	36,397,543	214	51.0	287
December	655,251	19,008,274	110	3,023,556	15,329,467	90	51.6	290
1920.								
January	480,293	41,950,071	242	201,399	41,288,379	243	53.5	301
February	392,613	26,103,165	151	1,096,565	24,613,987	145	52.5	295
March	683,029	33,031,931	191	1,372,267	30,976,635	182	51.5	289
April	1,132,994	54,085,770	313	779,257	52,173,519	307	51.3	288
May	613,104	13,388,934	77	2,423,086	10,352,744	61	50.3	283
June	1,200,212	21,079,627	122	2,247,970	17,631,445	104	38.6	217
July	781,898	9,444,610	55	717,855	7,944,857	47	29.5	166
August	683,320	14,447,810	83	572,871	13,191,619	78	28.3	159
September	863,316	11,736,534	68	1,178,680	9,694,538	57	28.0	157
October	915,056	8,706,392	50	698,893	7,092,343	42	27.5	154
November	716,348	12,250,505	71	473,593	11,180,564	65	24.9	140
December	604,437	13,392,392	77	652,143	12,135,812	71	21.9	123
1921.								
January	359,192	21,169,480	122	58,730	20,351,558	120	19.6	110
February	69,639	42,885,968	248	32,205	42,784,124	252	19.8	111
March	104,942	98,103,098	567	370,812	97,627,344	575	18.9	106
April	200,357	65,402,831	378	147,102	65,055,372	383	17.9	100.1
May	213,510	14,744,598	85	37,542	14,493,546	85	16.0	90
June	293,004	5,951,755	34	26,353	5,632,398	33	15.4	87
July	193,574	9,396,864	54	95,854	9,107,436	54	15.5	87
August	92,702	15,866,744	92	41,561	15,732,481	93	.....	.....

[1] From United States Department of Agriculture Year Book, 1920; Monthly Crop Reporter, January-August, 1921.

[2] Included in "All other articles" prior to Jan. 1, 1916. No deduction of exports has therefore been made prior to 1916.

Digitized by Google

The net imports of wool in 1920 was somewhat above the 1909–1913 average and about 200,000,000 pounds below the average of 1915 to 1920. The peak of post-war imports was reached in June, 1919, and began to decline very rapidly after January, 1920. The peak of prices of wool was reached in January, 1919, but the price remained relatively high during all of that year. It began to decline definitely in January, 1920, at the same time that imports began definitely to fall off.

The following table, G–26, gives the consumption of wool, by years, from 1918 to 1920 and by months from January, 1919, to April, 1921.

TABLE G–26.—*The consumption of wool in the United States, 1913–1921.*

[Source: Market Reporter, United States Department of Agriculture.]

Wool.[1]		Wool.[1]		Wool.[1]	
Years and months.	Millions of pounds.	Years and months.	Millions of pounds.	Years and months.	Millions of pounds.
1913		1919—Continued.		1920—Continued.	
1914		June	48.8	June	40.6
1915		July	54.9	July	32.3
1916		August	48.9	August	32.8
1917		September	52.9	September	30.9
1918	61.8	October	60.0	October	33.7
1919	52.2	November	52.4	November	24.1
1920	48.2	December	55.5	December	20.8
1919.		1920.		1921.	
January	32.5	January	63.0	January	26.3
February	23.1	February	55.2	February	31.4
March	29.3	March	58.3	March	40.8
April	39.1	April	57.8	April	40.8
May	45.0	May	50.6		

[1] Grease equivalent.

The peak of consumption of wool in the United States was reached in January, 1920, since which time it has steadily declined. This decline in consumption was doubtless a factor in reducing the price, although the enormous surplus stock of wool in this country as well as in the world was a major factor in bringing about that result.

The following estimates of the United States Department of Agriculture show the world's position with respect to wool as of May, 1921:

	Pounds.
British Government old stock, May 1	700,000,000
New clip, Southern Hemisphere (Oct.–Dec., 1920)	1,500,000,000
United States (old wool)	750,000,000
European stocks (except British Government stocks)	300,000,000
New clip, Northern Hemisphere (excluding Asia and Eastern Europe)	750,000,000
Total	4,000,000,000

The consumption of 1920 was summed up as follows:

	Pounds.
Western Europe	1,200,000,000
North America	600,000,000
Southern Hemisphere	100,000,000
Total	1,900,000,000

Digitized by Google

The world stock of wool is generally estimated at 2,000,000,000 pounds, or two-thirds of a year's clip. The world had, therefore, in 1920 about a two years' supply of wool.

Most of the governments engaged in the war had bought up large surplus stocks of wool in anticipation of war demands, and with the decline of this demand, consumption rapidly fell the world over. This, coupled with the surplus stocks which came on the market in 1920, was without doubt the major factor in inducing the rapid and disastrous decline in wool prices which occurred the latter half of 1920 and the first half of 1921.

BEEF AND VEAL.

Table G–27, on page 113, brings together the factors of beef and veal production, storage, imports, exports, consumption, and price. The post-war production of beef and veal reached their peak in October, 1919. Storage of beef and veal reached the high point in January, 1920. Imports of beef, while only a small per cent of beef and veal production, reached their peak in September, 1920. Total supplies of beef and veal including storage reached the high point in October, 1919. Exports of beef reached the high point in October, 1919, but did not begin to fall off definitely until June, 1920. During the last five months of 1920 exports of beef and veal were about one-third what they had been in the preceding six months, and during the first six months in 1921 were about one-fifth of what they had been in the last six months of 1919.

Imports of beef in the last six months of 1920, with the exception of July and December, 1920, exceeded exports. Consumption of beef and veal fell off definitely in November, 1919. Prices of beef and veal combined began to decline in August, 1919, recovering slightly in the four months beginning June, 1920. The price began to decline again in October, 1920, and has continued to decline until June, 1921.

Digitized by Google

TABLE G–27.—*Meat production, distribution and supply, beef and veal, July, 1919–May, 1921.*

[Department of Agriculture.]

	Storage at the beginning of the month.	Beef and veal production.	Imports.[1]	Total supplies.	Apparent consumption.	Exports.[1]	Storage at the end of the month.	Total utilization.	Weighted index of wholesale prices of beef and veal (monthly average 1910–1914=100).[2]
1919—July	191,883,108	509,978,535	2,794,176	704,655,819	497,064,986	17,869,115	190,221,718	704,655,819	174
August	190,221,718	503,305,660	3,055,116	696,582,494	485,521,367	13,465,820	197,595,307	696,582,494	191
September	197,595,307	493,227,688	3,356,870	694,177,865	478,732,461	11,874,003	203,571,401	694,177,865	185
October	203,571,401	595,925,557	3,158,175	802,655,133	544,497,616	36,366,456	221,791,062	702,655,133	188
November	221,791,062	547,170,749	3,576,785	772,538,596	493,459,707	20,221,214	258,857,675	772,538,596	190
December	258,857,675	519,135,548	3,365,971	781,359,194	471,411,504	11,083,673	298,864,017	781,359,194	190
1920—January	298,864,017	491,917,267	2,717,415	793,498,699	479,122,205	25,624,366	288,752,128	793,498,699	185
February	288,752,128	382,993,099	2,276,408	674,021,635	398,477,725	15,397,382	260,146,528	674,021,635	172
March	260,146,528	438,177,179	2,981,915	701,305,622	460,193,738	9,174,398	231,937,486	701,305,622	169
April	231,937,486	412,312,229	5,195,400	649,445,115	427,121,310	21,535,503	200,788,302	649,445,115	176
May	200,788,302	417,307,423	4,138,798	622,234,523	451,626,367	13,336,980	157,271,176	622,234,523	165
June	157,271,176	382,244,897	5,819,305	545,335,378	401,805,480	21,877,993	121,651,905	545,335,378	186
July	121,651,905	380,452,778	2,778,844	504,883,527	391,099,734	12,697,654	101,086,139	504,883,527	207
August	101,086,139	381,929,585	5,618,896	488,634,620	395,185,974	3,727,314	89,721,332	488,634,620	203
September	89,721,332	440,289,533	5,808,068	535,818,933	453,941,918	3,822,461	78,054,554	535,818,933	206
October	78,054,554	434,714,575	5,251,153	518,020,282	426,280,560	2,724,793	89,014,920	518,020,282	195
November	89,014,920	447,986,206	5,437,271	542,438,397	425,316,237	5,052,747	112,069,413	542,438,397	186
December	112,166,060	369,177,688	2,158,633	483,502,381	335,760,540	5,037,343	142,704,498	483,502,381	166
1921—January	142,812,694	387,809,840	4,273,228	534,955,762	383,726,066	8,352,402	142,877,294	534,955,762	147
February	142,891,255	302,991,809	1,167,706	447,050,770	297,681,531	4,463,515	144,905,724	447,050,770	133
March	146,408,568	375,696,163	1,741,384	523,846,115	382,542,332	3,259,133	138,044,650	523,846,115	140
April	138,344,733	347,569,475	2,571,947	488,486,155	364,440,333	1,945,468	122,100,354	488,486,155	143
May	122,187,869	345,784,107	3,293,252	471,265,228	358,963,215	2,340,208	109,961,805	471,265,228	139
June	109,552,746	391,686,605	1,855,874	503,095,225	404,187,853	2,358,101	96,549,271	503,095,225	135

[1] Imports and exports are of all beef excluding beef products, as tallow, etc.

[2] Index includes monthly average wholesale prices of beef, fresh carcass, good native steers, Chicago; beef, fresh native sides, New York; beef, salt, extra mess; veal, city dressed; steer, rounds No. 2, Chicago; steer, loins No. 2, fresh.

70678—H. Rept. 408, pt 1, 67–1——8

Digitized by Google

RECEIPTS AND SHIPMENTS OF LIVE STOCK.

Receipts of cattle and calves at the 15 principal live-stock markets reached their highest point in October, 1919, shortly after the peak of prices was reached in that year, as shown by Table G–28.

TABLE G–28.—*Receipts and shipments of live stock at 15 western markets.*[1]

[Monthly average, 1911–1913=100.]

[Bureau of Markets.]

RECEIPTS.

Year and month.	Cattle and calves.		Hogs.		Sheep.	
	Head.	Relative.	Head.	Relative.	Head.	Relative.
1919—January	1,656,046	164	4,603,335	209	1,079,377	79
February	1,096,118	116	3,451,894	168	774,881	61
March	1,094,614	109	2,842,063	129	847,842	62
April	1,255,379	125	2,823,484	128	970,070	71
May	1,262,065	125	3,049,223	139	934,613	68
June	1,122,782	111	3,061,338	139	1,116,003	82
July	1,527,881	152	2,411,539	110	1,558,767	114
August	1,541,133	153	1,595,759	73	2,200,229	162
September	1,871,042	186	1,704,944	78	2,890,331	212
October	2,317,487	230	2,160,079	98	2,405,511	176
November	2,046,664	203	2,715,955	124	1,743,189	128
December	1,650,315	164	3,785,370	172	1,589,237	116
1920—January	1,400,031	139	3,912,449	178	1,035,591	76
February	1,068,092	114	2,440,154	119	948,116	74
March	1,203,499	119	2,910,909	132	900,299	66
April	1,040,903	103	2,150,281	98	928,191	68
May	1,209,656	120	3,128,249	152	796,160	58
June	1,290,265	128	2,746,390	125	1,006,528	74
July	1,188,019	118	2,115,639	96	1,301,458	95
August	1,459,565	145	1,818,245	83	1,688,719	124
September	1,736,009	172	1,597,622	73	1,893,312	139
October	1,628,564	162	1,836,748	84	1,865,330	136
November	1,781,261	177	2,624,185	119	1,542,477	113
December	984,309	98	2,932,052	133	942,858	69
1921—January	1,191,814	118	3,339,419	152	1,112,024	81
February	835,686	89	2,902,107	141	972,647	76
March	1,119,548	118	2,390,480	109	1,161,549	85
April	994,916	89	2,279,495	104	1,077,906	79
May	1,062,988	105	2,401,246	109	1,097,976	80
June	1,117,111	111	2,671,462	122	1,130,874	83

SHIPMENTS.

1919—January	589,362	145	988,035	204	357,386	71
February	404,296	107	881,507	195	240,815	51
March	423,819	104	925,802	191	289,742	58
April	506,835	125	748,437	154	319,625	63
May	530,153	130	787,009	162	290,803	58
June	503,354	124	1,005,505	208	465,776	93
July	515,071	127	691,283	143	694,942	138
August	650,252	160	455,705	94	1,352,252	269
September	872,043	214	501,856	104	1,849,958	367
October	1,154,995	284	654,755	135	1,382,419	275
November	993,148	244	788,107	163	945,992	188
December	686,325	169	1,003,682	207	682,439	136
1920—January	548,841	135	1,026,763	212	403,382	80
February	427,608	113	814,253	180	334,012	71
March	418,310	103	923,526	191	298,878	59
April	414,967	102	712,087	147	373,381	74
May	515,062	127	822,907	170	316,002	63
June	528,273	130	797,946	165	399,616	79
July	508,199	125	737,923	152	644,557	128
August	640,295	157	627,670	130	899,342	179
September	819,371	202	540,812	112	1,027,510	204
October	866,327	213	584,742	121	1,192,912	237
November	810,284	199	784,468	162	952,159	189
December	472,748	116	943,515	195	384,646	76
1921—January	426,887	105	1,078,679	223	316,068	63
February	334,113	88	869,718	192	324,311	69
March	447,682	110	825,944	170	406,705	81
April	415,153	102	694,067	143	392,061	78
May	424,558	104	644,788	133	415,569	83
June	414,814	102	703,724	145	403,748	80

[1] Markets are: Chicago, Kansas City, Oklahoma City, Omaha, East St. Louis, St. Joseph, St. Paul, Sioux City, Cincinnati, Cleveland, Denver, Fort Worth, Indianapolis, Louisville, and Wichita.

Digitized by Google

Receipts during all of 1920 declined relatively as compared with 1919. There was, however, a seasonal increase in receipts during the latter half of 1920 which was doubtless somewhat augmented by increases in price during that period.

The total slaughter of beef and veal declined markedly in 1920 as did the relative per capita production of beef as indicated by slaughter. There was also a marked decline in the per capita consumption of beef in 1920. The decline in slaughter was undoubtedly due in part at least to the decline in price, while the fall in per capita consumption contributed to the price decline.

The slaughter of veal has markedly increased in recent years, both as indicated by total slaughter and relative per capita slaughter. This increase in slaughter has been accompanied by a marked increase of consumption, which has in its turn contributed to maintaining the price of veal relatively to the price of beef.

The increase noted in the slaughter of calves constitutes a menace to the food supply of the country which can not be viewed complacently. This marked increase in the slaughter of calves means that a smaller number of calves will be raised to maturity and the total supply of the country consequently diminished. The slaughter of calves during 1920 and 1921 was no doubt in part due to pressure for liquidation of loans which forced on the market a large number of calves and immature cattle. This results in depletion both of the herds and of the future meat supply of the country. The number of calves calved in 1920 was probably 2,600,000 less than in 1919 and 5,000,000 less than in 1918. Continuance of slaughter at this rate unless checked will lead to a marked decrease of cattle on farms and available meat supply in the future, with inevitably higher prices resulting. Not only have prices of cattle been inadequate to maintain production of beef cattle on a basis equivalent to the increase in consumption, but they have also resulted in slaughter of calves which otherwise might have been raised to increase the meat supply.

Table G–29, page 116, shows the actual and relative slaughter, exports, imports, and consumption of beef:

Tables G–30 and G–31, on pages 117–118, give the actual and relative exports, imports, and net exports of beef and beef products compared with weighted index of wholesale prices of beef and veal (monthly average price), 1910–1914 base, and the weighted index of price of cattle and steers per 100 pounds on the same base.

Digitized by Google

TABLE G–29.—*Estimated annual production, exports, imports, and consumption of beef and veal in the United States.*

[United States Department of Agriculture, Bureau of Animal Industry.]

BEEF.

Calendar year.	Slaughter.								Exports (million pounds).	Imports less re-exports (million pounds).	Consumption.		
	Actual number.	Relative increase in number.	Federally inspected (million pounds).	Other (million pounds).	Total (million pounds).	Relative increase in pounds slaughtered.	Pounds per capita.	Relative per capita.			Total (million pounds).	Per capita pounds).	Relative per capita average 1907–1916=100 (pounds).
1907	13,469,900	109	4,336	2,984	7,320	112	84	122	352	.....	6,968	79.7	117
1908	12,845,000	104	3,955	2,721	6,676	102	75	107	228	.....	6,448	72.4	106
1909	13,611,422	110	4,189	2,882	7,071	108	78	113	163	.....	6,908	76.2	112
1910	13,540,600	109	4,240	3,083	7,323	112	79	113	110	.....	7,213	78.1	115
1911	12,958,100	105	4,137	2,899	7,036	107	75	107	92	.....	6,944	73.9	109
1912	11,979,000	96	3,938	2,571	6,509	99	69	99	56	.....	6,453	67.5	99
1913	11,477,600	92	3,595	2,318	5,913	90	61	88	47	38	5,904	60.8	89
1914	11,004,500	89	3,601	2,038	5,639	86	58	84	95	265	5,809	58.9	87
1915	10,822,100	87	3,979	1,837	5,816	89	59	84	399	110	5,527	55.6	82
1916	12,026,700	97	4,362	1,756	6,118	93	61	88	287	20	5,851	58.1	85
1917	13,723,900	111	5,169	1,517	6,686	102	66	94	376	29	6,339	62.0	91
1918	15,750,400	127	5,885	1,756	7,641	117	74	107	728	112	7,025	67.8	100
1919	13,635,100	110	4,993	1,578	6,571	100	63	91	314	43	6,300	60.0	88
1920	12,176,400	97	4,451	1,660	6,111	93	58	84	164	53	6,000	56.4	83

VEAL.

1907	6,026,800	104	210	416	626	108	7.1	117	.....	.....	626	7.1	115
1908	5,829,900	101	203	402	605	104	6.8	111	.....	.....	605	6.8	110
1909	6,515,976	113	230	454	684	118	7.5	123	.....	.....	684	7.5	121
1910	6,552,600	113	235	452	687	118	7.4	121	.....	.....	687	7.4	120
1911	6,264,500	108	229	428	657	113	7.0	115	.....	.....	657	7.0	113
1912	6,348,000	110	239	429	668	115	7.0	115	.....	.....	668	7.0	113
1913	5,284,500	91	176	312	488	84	5.0	82	.....	.....	488	5.0	81
1914	4,661,400	81	158	275	433	75	4.4	72	.....	.....	433	4.4	71
1915	4,639,500	81	168	260	428	74	4.3	71	.....	.....	428	4.3	70
1916	5,773,900	100	220	316	536	92	5.3	87	.....	.....	536	5.3	86
1917	7,030,700	121	296	366	662	114	6.5	107	.....	.....	662	6.5	105
1918	7,767,200	134	323	403	726	125	7.0	115	.....	.....	726	7.0	113
1919	9,041,000	156	373	478	851	146	7.9	130	.....	.....	851	8.1	131
1920	9,662,800	167	382	527	909	156	8.5	139	.....	.....	909	8.5	138

Digitized by Google

TABLE G-30.—*Exports, imports, reexports, and net exports of beef and beef products.*

Year and month.	Total beef and beef products.				Total beef.[1]				Total beef products.[2]			Weighted index number of wholesale prices of beef and veal (monthly average prices 1910–1914 = 100).[4]	Relative price of cattle, and steers, good to choice, per 100 pounds (1910–1914 = 100).[5]
	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Net exports (pounds).[3]		
1909–10	282,877,242	.....	.....	282,877,242	127,405,575	.....	.....	127,405,575	155,471,667	.....	155,471,667	.....	.....
1910–11	232,128,044	.....	.....	232,128,044	93,618,984	.....	.....	93,618,984	168,509,060	.....	168,509,060	.....	.....
1911–12	230,297,201	.....	.....	230,297,201	64,378,658	.....	.....	64,378,658	165,918,543	.....	165,918,543	.....	.....
1912–13	163,495,762	.....	.....	163,495,762	40,059,655	.....	.....	40,059,655	123,436,107	.....	123,436,107	.....	.....
1913–14	145,955,007	180,137,183	118,313	34,182,176	33,125,111	180,137,183	118,313	146,893,759	112,829,896	.....	112,829,896	.....	.....
1914–15	378,280,872	184,490,759	854,236	194,644,349	277,558,938	184,490,759	854,236	93,922,415	100,721,934	.....	100,721,934	.....	.....
1915–16	439,067,104	71,101,756	26,115,014	394,060,362	320,132,447	71,101,756	26,115,014	275,145,705	118,934,657	.....	118,934,657	.....	.....
1916–17	405,086,373	15,217,118	4,779,940	394,649,195	322,766,893	15,217,118	4,779,946	312,329,721	82,319,480	.....	82,319,480	.....	.....
1917–18	583,462,445	26,451,655	4,776,280	562,787,070	521,844,093	25,451,655	4,776,280	501,168,718	61,618,352	.....	61,618,352	.....	.....
1918–19	561,194,720	47,479,116	1,231,168	514,946,762	485,730,477	36,670,374	1,231,168	450,391,271	75,464,243	10,808,742	64,655,491	.....	.....
1919–20	324,537,382	53,187,770	743,060	272,092,672	217,110,962	42,436,333	743,060	176,417,689	107,426,420	10,751,437	96,674,963	.....	.....
1920–21	178,441,033	52,081,739	.....	126,359,294	55,182,365	40,319,240	.....	14,863,125	123,258,668	11,762,499	111,496,169	.....	.....
1919.													
January	42,077,116	3,817,533	27,980	38,287,563	36,103,492	3,658,790	27,980	32,472,682	5,973,624	158,743	5,814,881	196	232
February	30,686,052	4,008,910	24,007	26,701,149	25,534,317	3,744,631	24,007	21,813,693	5,151,735	264,279	4,887,456	196	233
March	27,163,781	3,348,217	.....	23,815,564	21,859,643	3,140,331	.....	18,719,312	5,304,138	207,886	5,096,252	200	234
April	39,558,429	4,579,658	.....	34,978,771	27,198,800	3,355,283	.....	23,843,517	12,359,629	1,224,375	11,135,254	201	231
May	28,990,359	3,917,702	122,276	25,194,933	23,469,190	3,718,029	122,276	19,873,437	5,521,169	199,673	5,321,496	198	224
June	43,962,937	4,896,982	663,683	39,730,638	26,553,328	1,537,601	663,683	25,679,410	17,409,609	3,358,381	14,051,228	169	195
July	25,496,381	3,162,766	34,670	22,368,285	17,369,115	2,794,176	34,670	14,609,609	8,127,266	368,590	7,758,676	174	213
August	28,185,135	3,188,972	379,284	25,375,447	13,465,820	3,055,116	379,284	10,789,988	14,719,315	133,856	14,585,459	191	222
September	25,399,717	4,342,339	.....	21,057,378	11,874,003	3,356,870	.....	8,517,133	13,525,714	985,469	12,540,245	185	212
October	45,744,954	4,032,799	.....	41,712,155	36,366,455	3,158,175	.....	33,208,280	9,378,499	874,624	8,503,875	188	222
November	28,662,350	5,649,705	.....	23,012,645	20,221,214	3,576,785	.....	16,644,429	8,441,136	2,072,920	6,368,215	190	221
December	19,710,786	5,613,364	.....	14,097,422	11,083,673	3,365,971	.....	7,717,702	8,627,113	2,247,393	6,379,720	190	215
1920.													
January	30,576,199	3,383,121	.....	27,193,078	25,624,366	2,717,414	.....	22,906,952	4,951,833	665,707	4,286,126	185	201
February	20,520,379	2,425,528	.....	18,094,851	15,397,382	2,276,408	.....	13,120,974	5,142,997	149,120	4,993,877	172	189
March	17,807,355	3,984,781	6,720	13,829,294	9,174,398	2,981,915	6,720	6,199,203	8,632,957	1,002,866	7,630,091	169	182

[1] Total beef includes canned, fresh, and pickled.
[2] Total beef products includes oleo oil and tallow.
[3] There were no reexports of beef products during this period.

Digitized by Google

TABLE G-30.—*Exports, imports, reexports, and net exports of beef and beef products*—Continued.

Year and month.	Total beef and beef products.				Total beef.				Total beef products.			Weighted index number of wholesale prices of beef and veal (monthly average prices, 1910–1914 =100).	Relative price of cattle and steers, good to choice, per 100 pounds (1910–1914 =100).
	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Net exports (pounds).		
1920.													
April	29,852,198	5,418,327	20,363	24,454,234	21,535,503	5,195,400	20,363	16,360,466	8,316,695	222,927	8,093,768	176	175
May	24,936,558	5,032,075	182,600	20,087,083	13,336,980	4,138,798	182,600	9,380,782	11,599,578	893,277	10,706,301	165	159
June	27,841,410	6,953,993	119,423	21,006,840	21,877,993	5,819,305	119,423	16,178,111	5,963,417	1,134,688	4,828,729	186	189
July	18,858,149	4,019,176	51,890	14,890,863	12,697,654	2,778,844	51,890	9,970,700	6,160,495	1,240,332	4,920,163	207	194
August	9,348,251	7,999,311	.....	1,348,940	3,727,314	5,618,896	.....	1,891,582	5,620,937	2,380,415	3,240,522	203	193
September	10,588,766	7,459,822	.....	3,128,944	3,822,461	5,808,068	.....	1,985,607	6,766,305	1,651,754	5,114,551	206	192
October	13,802,484	9,063,519	.....	4,738,965	2,724,793	5,251,153	.....	2,526,350	11,077,691	3,812,366	7,265,325	195	185
November	14,203,760	5,682,704	.....	8,521,056	5,062,747	5,437,271	.....	384,524	9,151,013	245,433	8,905,580	186	184
December	15,177,371	3,694,385	.....	11,482,986	5,037,343	2,158,633	.....	2,878,710	10,140,028	1,535,752	8,604,276	166	152
1921.													
January	24,766,863	4,274,766	.....	20,492,097	8,352,402	4,273,228	.....	4,079,174	16,414,461	1,538	16,412,923	147	124
February	14,547,123	1,205,050	1,398,669	14,740,742	4,463,515	1,167,706	1,398,669	4,694,478	10,083,608	37,344	10,046,264	133	117
March	12,626,892	1,766,968	.....	10,859,924	3,259,133	1,741,384	.....	1,517,749	9,367,759	25,584	9,342,175	140	121
April	14,624,230	2,622,505	.....	12,001,725	1,945,468	2,571,947	.....	−626,479	12,678,762	50,558	12,628,204	143	110
May	15,911,294	3,416,294	51,705	12,546,715	2,340,208	3,293,252	51,706	−901,338	13,571,086	123,032	13,448,054	139	106
June	13,088,588	2,574,373	.....	10,514,215	2,358,101	1,855,874	.....	502,227	10,730,487	718,491	10,011,996	135	102

TABLE G-31.—*Relative exports, imports, reexports, and net exports of beef and beef products, based on Table G-30.*

Year and month.	Total beef and beef products.				Total beef.[1]				Total beef products.[2]			Monthly average prices (1910–1914=100).	
	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Net exports (pounds).[3]	Weighted index of wholesale prices.	Relative price of cattle, steers (per 100 lbs.).
1909–10	130	.....	.....	156	178	.....	.....	357	107	.....	107	.....	.....
1910–11	120	.....	.....	145	131	.....	.....	262	116	.....	116	.....	.....
1911–12	106	.....	.....	127	90	.....	.....	181	114	.....	114	.....	.....

Digitized by Google

1912–13	75	.....	.....	90	56	.....	.....	112	85	.....	85	.....
1913–14	67	100	.....	.....	46	.....	.....	.....	78	.....	78	.....
1914–15	174	102	.....	108	387	.....	.....	263	69	.....	69	.....
1915–16	202	39	.....	218	446	.....	.....	770	82	.....	82	.....
1916–17	187	8	.....	218	450	.....	.....	875	57	.....	57	.....
1917–18	269	14	.....	311	728	.....	.....	1,403	42	.....	42	.....
1918–19	258	26	.....	285	677	.....	.....	1,261	52	.....	44	.....
1919–20	150	29	.....	150	303	.....	.....	491	74	.....	67	.....
1920–21	82	29	.....	70	77	.....	.....	42	85	.....	77	.....
1919.												
January	232	25	.....	253	604	.....	.....	1,091	49	.....	48	196
February	171	27	.....	177	427	.....	.....	733	43	.....	40	196
March	150	22	.....	158	366	.....	.....	629	44	.....	42	200
April	219	31	.....	231	455	.....	.....	801	102	.....	92	201
May	160	26	.....	166	393	.....	.....	668	46	.....	44	198
June	243	33	.....	263	442	.....	.....	863	144	.....	116	169
July	141	21	.....	148	290	.....	.....	491	67	.....	64	174
August	155	21	.....	168	225	.....	.....	362	122	.....	120	191
September	140	29	.....	139	199	.....	.....	286	112	.....	104	185
October	252	27	.....	277	608	.....	.....	1,116	77	.....	70	188
November	158	37	.....	153	338	.....	.....	559	70	.....	53	190
December	109	37	.....	93	185	.....	.....	259	71	.....	53	190
1920.												
January	169	23	.....	180	429	.....	.....	769	41	.....	35	185
February	113	16	.....	119	258	.....	.....	441	42	.....	41	172
March	98	27	.....	92	153	.....	.....	208	71	.....	63	169
April	165	36	.....	162	360	.....	.....	550	69	.....	67	176
May	138	33	.....	133	223	.....	.....	315	98	.....	88	165
June	154	47	.....	139	366	.....	.....	543	49	.....	40	186
July	104	27	.....	98	212	.....	.....	335	51	.....	41	207
August	52	53	.....	9	62	.....	.....	.....	46	.....	27	203
September	58	50	.....	21	64	.....	.....	.....	56	.....	42	206
October	76	61	.....	31	46	.....	.....	.....	91	.....	60	195
November	79	38	.....	57	84	.....	.....	.....	76	.....	74	186
December	84	25	.....	76	84	.....	.....	97	84	.....	71	166
1921.												
January	137	29	.....	135	140	.....	.....	137	136	.....	136	147
February	80	8	.....	97	75	.....	.....	158	83	.....	83	133
March	70	12	.....	72	54	.....	.....	51	77	.....	77	140
April	81	17	.....	80	32	.....	.....	.....	105	.....	104	143
May	87	23	.....	83	39	.....	.....	.....	112	.....	111	139
June	72	17	.....	70	39	.....	.....	17	89	.....	17	135

124		
117		
121		
110		
106		
102		

[1] Total beef includes canned, fresh, and pickled.

[2] Total beef products includes oleo oil and allow.

[3] There were no reexports of beef products during this period.

Digitized by Google

Exports of beef were highest in 1918–19 and fell off rapidly in succeeding years. The exports in 1920–21 were but a small fraction of those in 1917–18 and 1918–19. Exports of beef products, however, reached their peak in June, 1919, and have been maintained relatively with considerable increase in the first six months of 1921. Exports of beef and beef products combined were highest in 1917–18, declining rapidly in the succeeding three years. In 1920–21 they were about one-fourth of those of 1917–18. The peak of postwar exports was reached in June, 1919, and from that point, allowing for seasonal fluctuations, fell rapidly. The weighted index of beef and veal prices shows the price of beef and veal combined reached the peak in April, 1919, and declined steadily until May, 1920, when there was a sharp rise for four months, after which it declined continuously. The price of cattle (steers, good and choice) reached its peak in March, 1919, after which it declined steadily until May, 1920, when there was a slight recovery and then a constant decline until June, 1921. As previously indicated, the initial impulse in the direction of decline in the price of beef cattle was given by a decline in exports due in a large measure to falling off of war requirements and later by the declining purchasing power among city workers consequent to industrial depression.

The following Table G–32 gives the detailed export of beef and beef products:

TABLE G–32.—*The actual export of beef and beef products, 1909–1921.*

[Monthly Summary of Foreign and Domestic Commerce.]

Year and month.	Canned.	Fresh.	Pickled.	Oleo oil.	Tallow.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
1909–10	14,804,596	75,729,066	36,871,313	126,091,675	29,379,992	282,877,242
1910–11	10,824,504	42,510,731	40,283,749	138,695,906	29,813,154	262,128,044
1911–12	11,026,431	15,264,320	38,087,907	126,467,124	39,451,419	230,297,201
1912–13	6,840,348	7,362,388	25,856,919	92,849,757	30,586,350	163,495,762
1913–14	3,464,733	6,394,404	23,265,974	97,017,065	15,812,831	145,955,007
1914–15	75,243,261	170,440,034	31,874,743	80,481,946	20,239,988	378,280,872
1915–16	50,803,765	231,214,000	38,114,682	102,645,914	16,288,743	439,067,104
1916–17	67,536,125	197,177,101	58,053,667	67,110,111	15,209,369	405,086,373
1917–18	97,343,283	370,032,900	54,467,910	56,603,388	5,014,964	583,462,445
1918–19	108,459,660	332,205,176	45,065,641	59,292,122	16,172,111	561,194,710
1919–20	31,166,814	153,560,647	32,383,501	74,529,394	32,897,026	324,537,382
1920–21	10,785,306	21,084,203	23,312,856	106,414,800	16,843,868	178,441,033
1919.						
January	12,636,060	17,436,495	6,030,937	5,552,790	420,834	42,077,116
February	8,149,204	13,749,993	3,635,120	4,452,805	698,930	30,686,052
March	3,458,973	14,641,276	3,759,394	4,154,644	1,149,494	27,163,781
April	2,896,729	21,628,390	2,673,681	7,667,229	4,692,400	39,558,429
May	5,639,420	14,872,987	2,956,783	2,819,365	2,701,804	28,990,359
June	6,574,766	15,212,094	4,786,468	12,366,500	5,043,109	43,982,937
July	5,392,104	8,675,947	3,301,064	3,737,120	4,390,146	25,496,381
August	2,894,361	8,077,346	2,494,113	8,188,148	6,531,167	28,185,135
September	1,152,616	7,249,366	3,472,021	6,730,818	6,794,896	25,399,717
October	1,793,784	31,170,249	3,402,422	6,810,457	2,568,042	45,744,954
November	1,392,475	15,651,087	3,177,652	7,096,636	1,344,500	28,662,350
December	1,886,835	6,061,769	3,135,069	6,008,652	2,618,461	19,710,786
1920.						
January	1,081,643	22,872,223	1,670,500	3,816,303	1,135,530	30,576,199
February	735,132	13,010,793	1,631,457	3,258,343	1,884,654	20,520,379
March	847,397	6,036,166	2,290,835	6,550,578	2,082,379	17,807,355
April	1,606,737	17,687,306	2,241,460	7,704,030	612,665	29,852,198
May	5,976,493	4,304,038	3,056,449	10,592,846	1,006,732	24,936,558
June	6,787,622	12,526,669	2,563,702	4,035,563	1,927,854	27,841,410
July	5,217,838	5,506,812	1,973,004	3,833,162	2,327,333	18,858,149
August	1,231,070	343,352	2,152,892	3,660,931	1,960,006	9,348,251
September	244,261	1,964,543	1,613,657	5,819,421	946,884	10,588,766
October	207,503	522,251	1,995,039	10,580,005	497,686	13,802,484
November	282,761	3,091,895	1,678,091	7,492,012	1,659,001	14,203,760
December	399,916	1,583,434	3,053,993	6,943,277	3,196,751	15,177,371

Digitized by Google

TABLE G–32.—*The actual export of beef and beef products, 1909–1921*—Continued.

Year and month.	Canned.	Fresh.	Pickled.	Oleo oil.	Tallow.	Total.
1921.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
January	548,227	6,078,550	1,725,625	15,088,402	1,326,059	24,766,863
February	1,733,678	979,081	1,750,756	9,250,483	833,125	14,547,123
March	504,356	508,230	2,246,547	8,348,238	1,019,521	12,626,892
April	366,682	214,193	1,364,593	12,219,737	459,025	14,624,230
May	326,459	191,366	1,822,383	13,145,292	425,794	15,911,294
June	186,647	167,318	2,004,136	9,951,967	778,520	13,088,588

During the period of the European war the export of fresh beef constituted a very large proportion of the total export of beef and beef products. This export was highest in the fiscal year 1917–18 and declined slightly in 1918–19. It declined about 50 per cent in 1919–20, and to almost the negligible quantity of 21,000,000 pounds in 1920–21. The export of canned beef was also large during the period of the European war, reaching its peak in 1919 with 108,000 000 pounds. It declined to 31,000,000 pounds in 1919–20 and to 10,000,000 pounds in 1920–21. Exports of oleo oil and tallow in general declined during the period of the European war and have somewhat increased during the two postwar years.

Examination of the figures month to month shows that the average monthly export of fresh beef in 1918–19 was approximately 30,000,000 pounds. The monthly export of fresh beef in 1919, as indicated by monthly figures, exceeds the monthly average of 1918–19 only in the month of October, 1919.

Beginning with February, 1920, the exports began to fall off without again recovering anything like the proportions existing even in the early part of 1919. The exports of canned beef began to fall off in February, 1919, and continued to fall off more or less constantly until May, 1921. Altogether, there can be no doubt that the falling off of exports, particularly of fresh and canned beef, was a large factor in the perpendicular decline in the price of beef and cattle which began early in 1919.

Chart G–3, page 122, shows graphically the course of per capita production, per capita consumption and total exports of beef and veal in their relation to the weighted prices of beef and veal and the price of steers (good and choice), by years, 1910 to 1920.

Chart G–4, page 123, is based on the same data by months, beginning with July, 1919, to June, 1921.

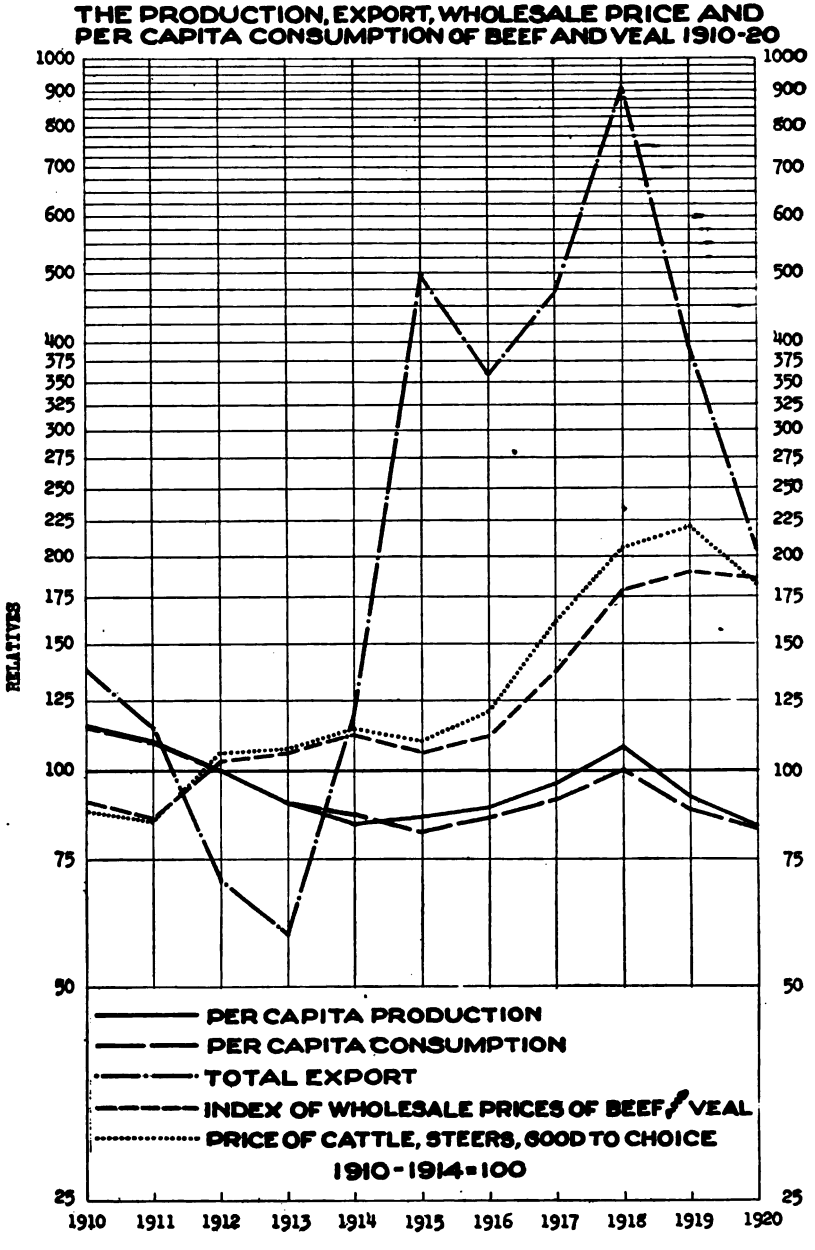
The chart shows a fairly normal relation between all of these factors in 1910 to 1914.

With the war demand, which began in 1914, exports of beef products rose with great rapidity. It was not until in 1916, however, that this increase in exports appeared to have a marked effect upon the price of beef and cattle. The larger part of this increase, however, was probably due to the general influences of expansion of the period.

Examination of chart G–4 shows the detail of the factors enumerated by months. Beginning with October, 1919, exports of beef and beef products began to decline with great rapidity, and during this decline the price of cattle and of beef also declined. Beginning with January, 1920, the available supply of beef, including slaughter, storage, and imports, began to decline, doubtless as a result of the descending price. This decline in supply resulted in a

Digitized by Google

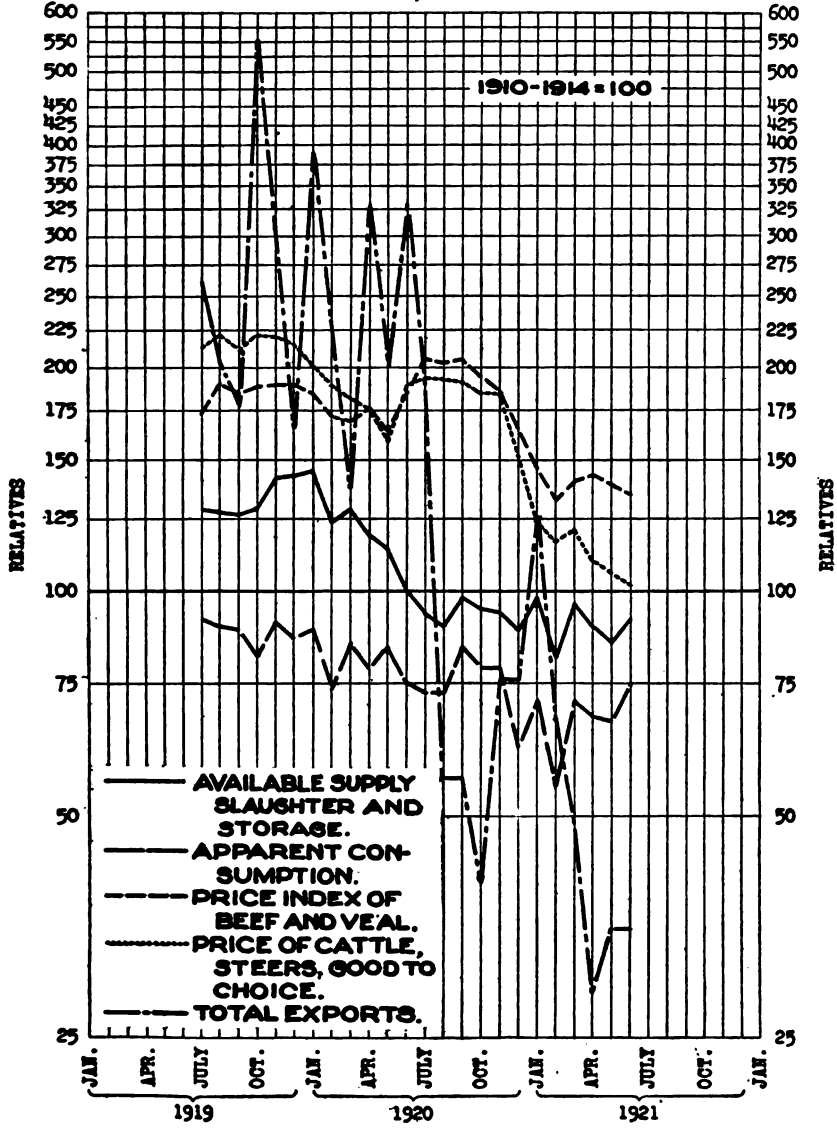
CHART G–3.



Digitized by Google

CHART G–4.

THE PRODUCTION, EXPORT, WHOLESALE PRICE AND PER CAPITA CONSUMPTION OF BEEF AND VEAL BY MONTHS, 1919-1921



Digitized by Google

recovery of price between May and September, 1920. During this period exports of beef further declined, resulting in a further decline of price between September and February, 1921.

The details upon which the charts are based will be found in Tables G–33 and G–34.

TABLE G–33.—*Beef and veal production, export, import, consumption, and price.*

ACTUAL FIGURES BY YEARS, 1910–1920.

By years.	Domestic production, total slaughter in pounds.[1]	Export of domestic for calendar years.[2]	Net import, for calendar years.	Net export.[3]	Total amount for consumption.[4]	Per capita production.	Per capita consumption.	Per cent of domestic production exported.[5]	Per cent of domestic production exported, based on net exports.[6]	Weighted index of prices of beef and veal (1910–1914 =100).[7]	Price of cattle, steers, good to choice.[8]
	Millions of pounds.	*Millions of pounds.*	*Millions of pounds.*	*Millions of pounds.*	*Millions of pounds.*	*Pounds.*	*Pounds.*				
1910...	7,323	110	.....	110	7,213	79.6	78.1	1.5	1.5	.....	7.017
1911...	7,036	92	.....	92	6,944	75.2	73.9	1.3	1.3	.....	6.727
1912...	6,509	56	.....	56	6,453	68.6	67.5	0.8	0.8	.....	8.402
1913...	5,913	47	38	9	5,904	61.4	60.8	0.7	0.1	.....	8.507
1914...	5,539	95	365	−170	5,809	57.7	58.9	1.6	−3.0	.....	9.039
1915...	5,816	399	110	289	5,527	58.8	55.6	6.7	4.9	.....	8.702
1916...	6,118	257	20	267	5,851	61.0	58.1	4.6	4.4	.....	9.573
1917...	6,686	376	29	347	6,339	65.7	62.0	5.5	5.1	.....	12.809
1918...	7,641	728	112	616	7,025	74.1	67.8	9.5	8.0	.....	16.424
1919...	6,571	314	43	271	6,300	62.9	60.0	4.7	4.0	.....	17.496
1920...	6,111	164	53	111	6,000	57.8	56.4	2.6	1.8	.....	14.518

RELATIVE FIGURES BY YEARS (1910–1914=100).

1910...	113	138	(9)	[10] 550	112	116	115	109	.....	91	88
1911...	109	115	(9)	460	107	110	109	94	.....	88	85
1912...	100	70	(9)	280	99	100	100	58	.....	103	106
1913...	91	59	19	45	91	90	90	51	.....	106	107
1914...	87	119	182	.....	90	84	87	116	.....	112	114
1915...	90	498	55	1,445	86	86	82	485	.....	106	110
1916...	94	359	10	1,335	91	89	86	333	.....	112	121
1917...	103	470	14	1,735	98	96	91	399	.....	137	161
1918...	118	910	56	3,030	109	108	100	688	.....	179	207
1919...	101	393	21	1,355	98	92	88	341	.....	190	221
1920...	94	205	26	555	93	84	83	188	.....	185	183

[1] Total slaughter, federally inspected and other, estimated by Bureau of Animal Industry, Department of Agriculture.

[2] Includes canned, fresh, and pickled beef, but not beef products, as oleo oil and tallow.

[3] Net export obtained by subtracting imports and adding reexports—Commerce Reports.

[4] Obtained by adding imports and subtracting exports of domestic and foreign.

[5] This is the per cent of the domestic crop exported.

[6] This is the per cent of the domestic crop exported after allowance has been made for amounts imported and reexported.

[7] Index based on the prices of following beef: Fresh, native sides; fresh carcass, good native steers; salt mess beef; veal, city dressed; steer rounds No. 2; steer loins No. 2.

[8] Source: Labor Department.

[9] Average 1913–14=100, since no imports previous.

[10] Base obtained by adding the net exports for the 4-year period 1910–13, and subtracting the net import for the year 1914, in which imports exceeded exports and dividing the result by 5 to obtain the net export for the 5-year base period.

Digitized by Google

TABLE G-33.—*Beef and veal production, export, import, consumption, and price*—Continued.

ACTUAL AND RELATIVE FIGURES, BY MONTHS, 1919–1921 (MONTHLY AVERAGE. 1910–1914=100).

By months.	Actual figures.					Relative figures.				
	Total supplies (storage products and imports).[11]	Total exports of domestic.[2]	Net exports.	Apparent consumption (total supplies, minus exports and storage).[12]	Per cent of supply exported.	Relative increase, total supply (monthly average, 1910–1914 =100).	Relative increase in apparent consumption (1910–1914 =100).	Relative increase, total export (base calendar years 1910–1920=100).	Weighted index of price of beef and veal (1910–1914 =100).[7]	Relative price of cattle steers, good to choice. 1910–1914=100.
	Millions of pounds.	*Millions of pounds.*	*Millions of pounds.*	*Millions of pounds.*						
1919.										
January									196	232
February									196	233
March									200	234
April									201	231
May									198	224
June									169	195
July	705	17.3	14.5	497	2.4	129	92	262	174	213
August	697	13.4	10.4	486	1.8	128	90	203	191	222
September	694	11.8	8.5	479	1.7	127	89	179	185	212
October	703	36.3	33.2	444	5.1	129	82	550	188	222
November	773	20.2	16.6	493	2.6	142	91	306	190	221
December	781	11.0	7.7	471	1.4	143	87	167	190	215
1920.										
January	793	25.6	22.9	479	3.2	145	89	388	185	201
February	674	15.3	13.1	398	2.2	124	74	232	172	189
March	701	9.1	6.1	460	1.2	129	85	138	169	182
April	649	21.5	16.3	427	3.3	119	79	326	176	175
May	622	13.3	9.1	452	2.1	114	84	202	165	159
June	545	21.8	16.0	402	4.0	100	75	330	186	189
July	505	12.6	9.9	391	2.4	93	73	191	207	194
August	489	3.7	− 1.8	395	0.7	90	73	56	208	193
September	536	3.8	− 1.9	453	0.7	98	84	56	206	192
October	518	2.7	− 2.5	426	0.5	95	79	41	195	185
November	512	5.0	− 0.3	425	1.0	94	79	76	186	184
December	484	5.0	2.8	336	1.0	89	62	76	166	152
1921.										
January	535	8.3	3.5	384	1.5	98	71	126	147	124
February	447	4.4	3.2	298	0.9	82	55	67	133	117
March	523	3.2	1.4	383	0.6	96	71	49	140	121
April	488	1.9	− 0.6	364	0.3	90	68	29	143	110
May	471	2.3	− 0.9	359	0.4	86	67	35	139	106
June	503	2.3	0.5	404	0.4	92	75	35	135	102
July										106

[2] Includes canned, fresh, and pickeled beef, but not beef products, as oleo oil and tallow.

[7] Index based on the prices of following beef: Fresh, native sides; fresh carcass, good native steers; salt mess beef; veal, city dressed; steer rounds No. 2; steer loins No. 2.

[11] Monthly production plus storage stocks plus imports. See Table, Production, distribution, and supply of beef and veal.

[12] Total supply as obtained under note (7), minus exports and amount remaining in storage at end of month. See table as in (7).

Digitized by Google

TABLE G-34.—*Actual price series composing the price index of beef and beef products.*[1]

[Quantities used as weight were those used by Department of Labor in their index of prices, and appear on page 175 of Wholesale Price Bulletin No. 269.]

Year and month.	Beef and veal.						Beef products.		Weighted index number of beef prices.	Weighted index number of price of beef products.	Weighted index number of price of beef and beef products.
	Beef, fresh carcass, good native steers, Chicago (average per pound).	Beef, fresh native sides, New York (average per pound).	Beef, salt, extra mess (average per pound).	Veal, city dressed (average per pound).	Steer, rounds, No. 2, Chicago (average per pound).	Steer, loins, No. 2 (average per pound).	Oleo oil (average per pound).	Tallow, packer's prime, Chicago (per pound).			
1910	$0.115	$0.103	$14.589	$0.136	$0.119	$0.151	$0.117	$0.073	91	106	92
1911	.112	.098	12.909	.129	.113	.145	.109	.065	88	97	88
1912	.133	.121	15.793	.146	.128	.150	.106	.062	103	93	103
1913	.130	.125	18.923	.181	.131	.158	.115	.071	106	104	106
1914	.136	.135	19.755	.185	.133	.184	.109	.069	112	100	112
1915	.129	.126	18,639	.182	.124	.171	.122	.069	106	106	106
1916	.138	.134	18,939	.190	.130	.181	.140	.099	112	135	113
1917	.167	.164	28,250	.226	.162	.217	.217	.156	137	211	140
1918	.221	.209	33,049	.274	.221	.299	.257	.179	179	246	182
1919	.233	.215	31,080	.302	.224	.366	.506	.154	190	253	192
1920	.230	.206	18,062	.316	.213	.371	.214	.131	185	193	185
1919.											
January	.245	.230	35.500	.297	.220	.358	.313	.110	196	226	198
February	.245	.228	35.500	.290	.220	.380	.302	.101	196	215	197
March	.245	.231	35.500	.293	.233	.390	.283	.103	200	207	201
April	.245	.231	35.500	.270	.246	.385	.294	.126	201	228	202
May	.245	.226	35.500	.255	.250	.366	.317	.149	255	198	200
June	.208	.198	35.500	.275	.225	.290	.329	.160	169	268	172
July	.208	.199	34.300	.305	.225	.296	.338	.205	174	303	179
August	.235	.211	31.250	.323	.238	.350	.308	.193	191	280	194
September	.228	.201	26.700	.335	.230	.850	.303	.170	185	245	187
October	.229	.213	23.250	.329	.208	.387	.283	.187	188	264	191
November	.235	.212	22.833	.325	.193	.435	.308	.172	190	266	193
December	.235	.213	22.100	.325	.200	.419	.305	.162	190	258	193
1920.											
January	.232	.210	18.625	.325	.200	.370	.294	.180	185	265	188
February	.213	.189	17.000	.325	.195	.358	.279	.160	172	244	175
March	.205	.193	17.000	.325	.190	.335	.260	.161	169	235	172
April	.209	.209	17.000	.339	.190	.344	.240	.157	176	223	177
May	.195	.192	17.000	.300	.190	.325	.210	.141	165	197	166
June	.223	.220	17.000	.280	.215	.373	.196	.120	186	176	185
July	.255	.221	18.125	.296	.276	.430	.182	.122	207	171	206

Digitized by Google

August	.255	.217	18.500	.320	.250	.418	.166	.128	203	168	202
September	.260	.228	19.250	.320	.240	.413	.195	.134	206	185	205
October	.252	.210	19.500	.320	.216	.406	.205	.120	195	181	194
November	.240	.202	19.500	.320	.205	.371	.178	.087	186	145	184
December	.222	.174	18.250	.320	.186	.307	.160	.065	166	122	164
1921.											
January	.174	.169	17.000	.315	.160	.300	.133	.068	147	111	146
February	.160	.146	17.000	.300	.143	.278	.129	.065	133	107	132
March	.163	.164	17.000	.300	.150	.288	.125	.058	140	100	139
April	.165	.164	17.000	.300	.160	.302	.100	.056	143	86	141
May	.165	.153	17.000	.300	.158	.293	.102	.060	139	90	137
June	.160	.149	13.750	.300	.155	.280	.097	.055	135	84	133
July	.149	.140	13.000	.300	.160	.280	.093	.056	130	83	128

[1] The price series and the amount of each commodity consumed used for weighting figure are from Bureau of Labor Statistics Wholesale Price Bulletin No. 269.

Digitized by Google

LEATHER.

Leather production in the year 1920 was materially below that of 1919. The monthly production thus far in 1921 has been below the monthly production of 1920. This decline in leather production was another factor in the decline of the wholesale prices of beef cattle.

The following table, G–35, gives the actual and relative production of leather from 1918 to 1921:

TABLE G–35.—*The actual and relative production of leather products, 1918–1921.*[1]

[Base year in bold-faced type.]

Year and month.	Relative to 1919.			Sole leather produced (sides).	Skivers produced. (dozens).	Oak and union harness (stuffed sides).
	Sole leather produced.	Skivers produced.	Oak and union harness.			
	A.—Index numbers.			B.—Numerical data.		
1918 monthly average	88	107	214	1,653,073	16,039	203,596
1919 monthly average	**100**	**100**	**100**	**1,876,285**	**15,032**	**95,244**
1920 monthly average	82	88	102	1,535,290	13,274	96,974
1920.						
January	91	99	100	1,704,369	14,837	95,457
February	82	74	107	1,532,115	11,140	101,989
March	94	82	116	1,764,387	12,347	110,606
April	85	80	116	1,589,756	12,014	110,830
May	91	108	111	1,706,008	16,229	105,568
June	95	103	106	1,786,466	15,535	100,718
July	81	84	105	1,513,344	12,563	99,748
August	70	88	102	1,322,594	13,275	97,580
September	73	92	100	1,375,763	13,788	95,204
October	78	97	101	1,459,073	14,626	96,243
November	70	87	77	1,315,631	13,034	73,265
December	72	66	70	1,353,581	9,896	66,482
1921.						
January	63	95	44	1,190,950	14,234	42,236
February	63	93	60	1,177,888	13,987	56,971
March	72	112	74	1,351,140	16,867	70,194
April	76	90	73	1,422,727	13,484	69,922
May	83	96	60	1,561,220	14,499	57,480
June	81	98	60	1,521,521	14,753	57,196

[1] From the Survey of Current Business, Bureau of Census, July, 1921. Supplied by the Tanner's Council.

PORK.

The production of pork in 1920 as indicated by Table G–36, on page 129, was relatively less than in 1918 or 1919 and larger than the prewar average of 1909–1914, as was also the per capita production. Exports of pork in 1920 were about one-half the exports in 1918–19, while consumption of pork in 1920 was slightly higher than in 1919 and lower than 1918.

The monthly production of pork reached its peak in January, 1920, and allowing for seasonal fluctuations, fell off rapidly thereafter. See Table G–37, page 130.

Exports of pork and pork products combined reached their peak in June, 1919, as did exports of pork and pork products separately. The price of pork reached its peak in July, 1919, and the price of hogs in the same month. Thereafter the price declined rapidly, with some recovery during the first 10 months of 1920, after which it began to decline with greater rapidity than before. The recovery during the early part of 1920 was apparently the result of reduced production and slaughter, as indicated in Table G–37, on page 130.

Digitized by Google

TABLE G–36.—*Estimated annual production, exports, imports, and consumption of pork in the United States.*

[United States Department of Agriculture, Bureau of Animal Industry.]

Year.	Slaughter.								Exports (million pounds).	Imports, less re-exports (million pounds).	Consumption.		
	Actual number.	Relative increase in number.	Federally inspected (million pounds).	Other (million pounds).	Total (million pounds).	Relative increase in pounds slaughtered.	Pounds per capita.	Relative per capita.			Total (million pounds).	Per capita (pounds).	Relative per capita average 1907–1916=100 (pounds).
1907	55,737,900	95	4,420	3,071	7,491	101	86	109	1,014	.....	6,477	74.1	102
1908	65,496,800	112	4,853	3,373	8,226	111	92	116	619	.....	7,607	85.4	118
1909	53,219,568	91	3,946	2,744	6,690	90	74	94	472	.....	6,218	68.6	95
1910	44,073,500	75	3,470	2,411	5,881	79	64	81	313	.....	5,568	60.3	83
1911	58,022,000	99	4,481	3,080	7,511	101	80	101	456	.....	7,055	75.1	104
1912	56,022,000	96	4,242	2,947	7,189	97	76	96	440	.....	6,749	70.6	97
1913	57,973,500	99	4,420	3,072	7,492	101	78	99	456	3	7,039	72.5	100
1914	55,148,100	94	4,264	2,964	7,228	97	74	94	377	38	6,889	69.9	97
1915	65,064,000	111	4,749	3,801	8,050	109	81	103	906	7	7,151	72.0	99
1916	73,035,600	125	5,196	3,448	8,634	116	86	109	1,011	2	7,625	75.7	105
1917	57,488,800	98	4,071	2,830	6,901	93	68	86	943	10	5,968	58.4	81
1918	69,854,700	119	5,391	3,746	9,137	123	89	113	1,724	97	7,510	73.5	100
1919	70,867,500	121	5,469	3,800	9,269	125	89	113	1,897	11	7,383	70.3	97
1920	64,449,400	110	4,996	3,474	8,470	114	80	101	925	6	7,551	71.0	98

Digitized by Google

TABLE G-37.—*Meat production, distribution and supply, pork, July, 1919–May, 1921.*

[Estimates by Bureau of Animal Industry, Department of Agriculture.]

	Storage at the beginning of month.	Production.	Imports.	Total supplies.	Apparent consumption.	Exports.	Storage at end of month.	Total utilization.	Weighted index of wholesale prices of pork (monthly average prices 1910–1914=100).[1]
1919—July	959,386,552	508,448,811	192,959	1,468,028,322	415,392,984	170,187,335	882,448,003	1,468,028,322	281
August	882,448,003	346,020,808	238,155	1,228,706,966	329,776,228	128,426,987	770,503,751	1,228,706,966	260
September	770,503,751	346,006,064	298,645	1,116,808,460	345,537,121	79,356,361	691,914,978	1,116,808,460	240
October	691,914,978	445,129,741	209,961	1,137,254,680	493,140,654	75,193,369	568,920,659	1,137,254,680	212
November	568,920,659	537,518,172	251,620	1,106,690,451	504,422,839	88,286,048	513,981,564	1,106,690,451	209
December	513,981,564	803,677,523	166,264	1,317,825,351	639,328,334	80,858,956	597,638,061	1,317,825,351	196
1920—January	597,638,061	877,517,644	127,155	1,475,282,860	600,497,301	98,022,290	776,763,269	1,475,282,860	190
February	776,763,269	528,251,841	234,013	1,305,249,123	291,930,814	109,968,321	903,349,988	1,305,249,123	194
March	903,349,988	601,077,235	45,249	1,504,472,472	423,306,085	112,437,421	968,728,966	1,504,472,472	196
April	968,638,966	433,315,896	69,611	1,402,024,473	397,372,456	43,945,805	960,706,212	1,402,024,473	212
May	960,706,212	578,870,436	148,410	1,539,725,058	506,321,972	74,065,359	959,337,727	1,539,725,058	209
June									
July	982,453,938	469,560,345	33,877	1,452,048,160	473,740,357	45,280,032	933,027,771	1,452,048,160	205
August	933,027,771	387,402,877	47,959	1,320,478,607	477,964,598	35,502,557	807,011,452	1,320,478,607	206
September	807,011,452	335,887,476	50,560	1,142,949,488	472,234,759	54,273,928	616,440,801	1,142,949,488	211
October	616,440,801	406,316,257	539,355	1,023,296,413	483,153,611	67,345,078	472,797,724	1,023,296,413	215
November	472,797,724	544,131,637	68,810	1,016,998,171	512,888,160	74,308,556	429,801,455	1,016,998,171	187
December	426,676,730	663,403,759	125,114	1,090,205,603	461,374,989	95,839,711	532,990,903	1,090,205,603	152
1921—January	533,980,299	744,128,368	37,492	1,278,146,159	542,139,055	81,884,584	654,122,520	1,278,146,159	151
February	669,831,693	664,634,168	33,183	1,334,499,044	437,955,450	56,650,984	839,892,610	1,334,499,044	147
March	837,158,377	531,629,685	138,539	1,368,926,601	468,982,794	59,484,893	840,458,914	1,368,926,601	159
April	842,906,257	521,521,309	39,341	1,364,466,907	499,641,297	63,753,089	801,072,521	1,364,466,907	160
May	802,190,132	560,757,505	30,207	1,362,977,844	472,233,107	89,733,872	801,010,865	1,362,977,844	149

[1] Weighted index number calculated from the monthly average prices of bacon, rough sides; bacon, short clear sides; hams, smoked loose; salt, mess pork; pork loins, fresh, Chicago; and pork loins, western, New York. Prices supplied by Bureau of Labor Statistics.

Digitized by Google

TABLE G-38.—*Actual and relative export, import, reexport, and net export of pork and pork products.*

[1909–1913=100.] [1]

	Total pork and pork products.[2]				Total pork.[3]				Total pork products,[4] exports (pounds).	Weighted index number of wholesale prices of pork (monthly average 1910–1914 =100).[5]	Relative increase in price of hogs, heavy (1910–1914 =100).
	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).			
1909–10	707,110,062	.....	.....	707,110,062	344,182,391	.....	.....	344,182,391	362,927,671	.....	.....
1910–11	879,455,006	.....	.....	879,455,006	365,480,337	.....	.....	365,480,337	513,974,669	.....	.....
1911–12	1,071,951,724	.....	.....	1,071,951,724	477,377,950	.....	.....	477,377,950	594,573,774	.....	.....
1912–13	984,696,710	.....	.....	984,696,710	420,893,634	.....	.....	420,893,634	563,803,076	.....	.....
1913–14	921,913,029	4,624,799	168	917,288,398	411,131,451	4,624,799	168	406,506,820	510,781,578	.....	.....
1914–15	1,106,180,488	16,250,514	.....	1,089,929,974	604,627,526	16,250,514	.....	588,377,012	501,552,962	.....	.....
1915–16	1,459,532,294	2,169,084	195,960	1,457,559,170	998,094,366	2,169,084	195,960	995,925,282	461,437,928	.....	.....
1916–17	1,499,478,795	1,651,227	2,784	1,497,830,352	1,037,133,015	1,651,227	2,784	1,035,677,748	462,345,780	.....	.....
1917–18	1,691,437,435	1,847,733	170	1,689,589,702	1,294,672,551	1,847,733	170	1,292,827,602	396,764,884	.....	.....
1918–19	2,704,076,328	2,744,412	19,290	2,701,351,206	1,961,909,057	2,744,412	19,290	1,959,164,815	742,167,271	.....	.....
1919–20	1,761,716,951	2,132,944	118,966	1,759,702,973	1,151,290,375	2,132,944	118,966	1,149,176,721	610,426,576	.....	.....
1920–21	1,521,459,919	1,212,495	.....	1,520,247,424	752,758,260	1,212,495	.....	751,664,781	768,701,659	.....	.....
1919.											
January	197,963,757	305,914	34	197,657,877	160,032,259	305,914	34	159,726,379	37,931,498	.....	.....
February	236,420,008	227,161	10	236,192,857	167,294,674	227,161	10	167,067,523	69,125,334	.....	.....
March	341,296,151	314,032	28	340,982,147	240,493,664	314,032	28	240,179,660	100,802,487	.....	.....
April	348,039,703	174,869	19,118	347,883,952	255,910,871	174,869	19,118	255,755,120	92,128,832	.....	.....
May	180,889,959	240,745	.....	180,649,214	124,036,100	240,745	.....	123,795,355	56,853,859	.....	.....
June	400,392,306	59,030	55	400,333,330	283,199,094	59,030	55	283,140,119	117,193,712	.....	.....
July	258,960,492	192,959	39,430	258,806,963	170,187,335	192,959	39,430	170,033,806	88,773,157	.....	.....
August	179,503,253	238,155	113	179,265,211	128,426,987	238,155	113	128,188,945	51,076,266	.....	.....
September	117,762,778	498,645	90	117,264,223	79,356,361	498,645	90	78,857,806	38,406,417	.....	.....
October	117,943,823	209,961	.....	117,733,862	75,193,367	209,961	.....	74,983,406	42,750,456	.....	.....
November	131,163,740	251,620	60,572	130,912,691	88,286,048	251,620	60,572	88,095,000	42,877,692	.....	.....
December	144,797,994	166,264	100	144,631,830	80,858,956	166,264	100	80,692,792	63,939,038	.....	.....

[1] The monthly average for the 5-year period (obtained by dividing the total import for 5 years by the total number of months, usually 12) was used as the base for calculating the monthly relative figures.

[2] Includes bacon, hams, and shoulders, canned, fresh, and pickled; lard and neutral lard.

[3] Includes bacon, ham, and shoulders, canned and pickled.

[4] Total pork products includes neutral lard and lard which was 93 per cent of the total pork product exported in 1920; there were no imports or reexports of pork products during this period.

[5] Weighted index number calculated from monthly average prices of bacon, rough sides; bacon, short clear sides; hams, smoked; salt mess pork; fresh loins, Chicago; fresh loins, western, New York.

Digitized by Google

TABLE G-38.—*Actual and relative export, import, reexport, and net export of pork and pork products*—Continued.

	Total pork and pork products.				Total pork.				Total pork products, exports (pounds).	Weighted index number of wholesale prices of pork (monthly average 1910–1914 =100).	Relative increase in price of hogs, heavy (1910–1914 =100).
	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).	Exports (pounds).	Imports (pounds).	Reexports (pounds).	Net exports (pounds).			
1920.											
January	137,741,589	127,155	335	137,314,169	98,022,290	127,155	335	97,895,470	39,419,299	.....	.....
February	147,138,406	234,013	.....	146,904,393	109,968,321	234,013	.....	109,734,308	37,170,085	.....	.....
March	185,438,822	45,249	1,942	185,396,515	112,437,421	45,249	1,942	112,394,114	73,001,401	.....	.....
April	87,642,383	69,611	1,548	87,574,320	43,945,805	69,611	1,548	43,877,742	43,696,578	.....	.....
May	134,208,331	148,410	275	134,060,196	74,065,359	148,410	275	73,917,224	60,142,972	.....	.....
June	137,366,546	50,896	14,561	137,330,211	90,193,331	50,896	14,561	90,156,996	47,173,215	.....	.....
July	94,224,946	33,877	188	94,191,257	45,280,032	33,877	188	45,246,343	48,944,914	.....	.....
August	67,700,855	47,959	80	67,652,976	35,502,557	47,959	80	35,454,678	32,198,298	.....	.....
September	102,472,050	50,560	32	102,421,521	54,273,928	50,560	32	54,223,400	48,198,122	.....	.....
October	123,191,310	539,355	43	122,651,998	67,345,078	539,355	43	66,805,766	55,846,232	.....	.....
November	132,717,677	68,810	215	132,649,081	74,308,556	68,810	215	74,239,961	58,409,121	.....	.....
December	187,127,496	125,114	163	187,002,545	95,803,711	125,114	163	95,714,760	91,287,785	.....	.....
1921.											
January	161,694,263	37,492	5	161,656,776	81,884,584	37,492	5	81,847,097	79,809,679	.....	.....
February	151,335,856	33,183	101	151,302,774	56,650,984	33,183	101	56,617,902	94,684,872	.....	.....
March	143,168,389	138,539	532	143,030,382	59,484,893	138,539	532	59,346,886	83,683,496	.....	.....
April	118,191,654	39,341	116	118,152,429	63,753,089	39,341	116	63,713,864	54,438,565	.....	.....
May	141,041,345	30,207	38	141,011,176	89,733,872	30,207	38	89,703,703	51,307,473	.....	.....
June	128,908,358	68,058	.....	128,840,300	59,015,256	68,058	.....	58,947,198	69,893,102	.....	.....

[Yearly average, 1909–1913=100, for the period 1909–1913 to 1920–21, by years; monthly average, 1909–1913=100, for the period 1919–1921, by months.]

1909–10	77	.....	.....	78	85	.....	.....	85	71	.....	.....
1910–11	96	.....	.....	96	91	.....	.....	91	101	.....	.....
1911–12	117	.....	.....	118	118	.....	.....	118	117	.....	.....
1912–13	108	.....	.....	108	104	.....	.....	104	111	.....	.....
1913–14	101	100	.....	101	102	.....	.....	101	100	.....	.....
1914–15	121	352	.....	120	150	.....	.....	146	98	.....	.....
1915–16	160	48	.....	160	247	.....	.....	247	91	.....	.....
1916–17	164	37	.....	164	257	.....	.....	257	91	.....	.....

Digitized by Google

| | | |

The following Table G–39 gives details of exports of pork products by fiscal years, 1909–1910 to 1920–21, and by months beginning January, 1919, and concluding January, 1921.

TABLE G–39.—*The actual export of pork and pork products from the United States, 1913–1921.*

[Commerce Reports.]

Years and months.	Bacon.	Hams and shoulders.	Canned.	Fresh.
1909–10	152,163,107	146,885,385	4,062,022	1,040,278
1910–11	156,675,310	157,709,316	4,010,852	1,355,378
1911–12	208,574,208	204,044,491	5,839,902	2,597,880
1912–13	200,993,584	159,544,687	4,148,343	2,457,997
1913–14	193,934,252	165,831,791	3,074,303	2,668,020
1914–15	346,718,227	203,701,114	4,664,418	3,908,193
1915–16	579,808,786	282,208,611	9,610,732	63,005,524
1916–17	667,151,972	266,656,581	5,896,126	50,435,615
1917–18	815,294,424	419,571,869	5,194,468	21,390,288
1918–19	1,238,247,321	667,240,022	5,273,329	19,644,388
1919–20	803,666,917	275,455,931	3,261,967	27,224,941
1920–21	489,298,109	172,011,676	1,118,967	57,043,446
1919.				
January	102,679,002	54,846,433	237,728	31,583
February	114,840,110	49,283,053	391,865	868,634
March	151,086,397	85,712,462	816,325	737,008
April	141,814,255	109,569,968	827,723	1,238,471
May	67,663,813	49,099,877	809,083	4,368,255
June	172,441,100	96,854,552	480,928	10,291,375
July	117,679,193	47,452,534	249,374	2,413,319
August	84,150,798	40,147,727	466,423	1,544,243
September	57,209,378	18,209,239	638,506	536,803
October	56,462,312	13,090,972	392,479	1,443,469
November	65,288,382	16,840,285	310,771	1,411,914
December	58,982,754	15,688,297	170,501	1,891,854
1920.				
January	77,501,002	13,905,923	92,427	2,271,751
February	75,891,195	24,217,706	167,604	5,981,506
March	75,002,410	31,068,859	218,507	2,967,189
April	24,356,349	15,640,236	110,400	1,054,285
May	50,412,388	17,896,764	328,127	1,616,923
June	60,730,935	21,277,089	130,975	4,091,683
July	31,562,761	8,385,089	339,045	2,086,899
August	23,333,156	9,360,469	154,428	396,993
September	41,371,561	8,997,124	77,935	547,406
October	49,838,768	8,787,853	66,573	5,102,428
November	57,934,259	11,197,880	55,571	2,515,415
December	68,784,322	14,491,763	76,817	9,795,357
1921.				
January	43,202,486	16,869,341	31,192	18,691,971
February	31,612,140	15,847,799	125,796	5,914,797
March	35,350,774	19,102,633	42,732	2,964,420
April	32,851,837	24,925,807	31,997	3,927,597
May	68,464,256	15,506,520	29,533	3,173,520
June	35,011,966	18,536,898	89,389	2,089,244

Digitized by Google

TABLE G-39.—*The actual export of pork and pork products from the United States, 1915–1921*—Continued.

Years and months.	Pickled.	Lard.	Neutral lard.	Total pork and pork products.
1909–10	40,031,599	362,927,671	.....	707,110,062
1910–11	45,729,471	476,107,857	37,866,812	879,455,006
1911–12	56,321,469	532,256,865	62,317,909	1,071,951,724
1912–13	53,749,023	519,025,384	44,777,692	984,696,710
1913–14	45,543,085	481,457,792	29,323,796	921,913,029
1914–15	45,655,574	475,531,908	26,021,054	1,106,180,488
1915–16	63,460,713	427,011,338	34,426,590	1,459,532,294
1916–17	46,992,721	444,769,540	17,576,240	1,499,478,795
1917–18	33,221,502	392,506,355	4,258,529	1,691,437,435
1918–19	31,503,997	724,771,383	17,395,888	2,704,076,328
1919–20	41,680,619	587,224,549	23,202,027	1,761,716,951
1920–21	33,296,062	746,157,356	22,544,303	1,521,459,919
1919.				
January	2,237,513	37,850,338	81,160	197,963,757
February	1,910,962	68,972,779	152,555	236,420,008
March	2,141,508	97,239,435	3,563,052	341,296,151
April	2,460,454	86,555,951	5,572,381	348,039,703
May	2,095,072	55,000,729	1,353,130	180,889,959
June	3,131,139	114,328,824	2,864,888	400,392,806
July	2,392,615	86,191,734	2,581,423	258,960,492
August	2,117,796	49,032,878	2,043,388	179,503,253
September	2,762,435	36,960,364	1,446,053	117,762,778
October	3,804,135	41,016,518	1,733,938	117,943,823
November	4,934,696	42,106,339	771,353	131,163,740
December	4,125,550	63,645,722	293,316	144,797,994
1920.				
January	4,251,187	38,823,902	595,397	137,441,589
February	3,710,308	36,644,906	525,179	147,138,406
March	3,160,456	69,429,785	3,571,616	185,438,822
April	2,784,535	40,758,401	2,938,177	87,642,383
May	3,816,157	55,544,483	4,598,489	134,208,331
June	3,962,649	45,069,517	2,103,698	137,366,546
July	2,926,247	47,061,422	1,883,492	94,224,946
August	2,257,511	31,020,802	1,177,496	67,700,855
September	3,279,902	46,326,353	1,871,769	102,472,050
October	3,549,456	54,173,979	1,672,253	123,191,310
November	2,605,431	57,316,309	1,092,812	132,717,677
December	2,691,452	90,080,092	1,207,693	187,127,496
1921.				
January	3,089,094	76,185,237	3,624,442	161,694,263
February	3,150,452	91,840,951	2,843,921	151,335,856
March	2,024,334	82,616,583	1,066,913	143,168,389
April	2,005,851	53,275,457	1,163,108	118,191,654
May	2,558,043	48,604,395	2,703,078	141,041,345
June	3,337,759	67,855,776	2,237,326	128,908,358

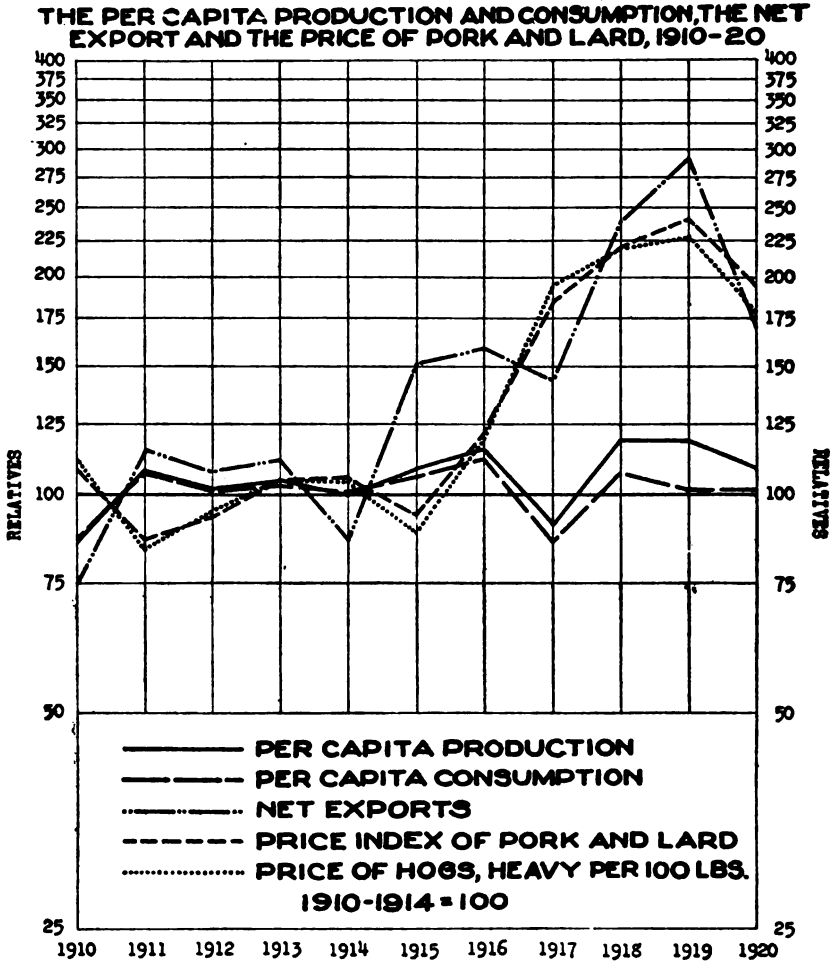
Exports of bacon, hams, and shoulders were highest in the fiscal year 1918–19. Exports of bacon declined rapidly in 1919 and 1920, as did also hams, shoulders, and canned pork. Exports of fresh pork, however, slightly increased in the fiscal year 1919–20 as compared with 1918–19 and further increased in 1920–21. Exports of lard declined in 1919–20 and increased again in 1920–21. Exports of bacon reached their peak in June, hams and shoulders in April, canned pork in April, fresh pork and lard in June, 1919. The decline in exports of pork products in the latter half of 1919 and during 1920 was doubtless in a large measure due to the failure of war demands for the supply of armies abroad and the failing purchasing power of European population.

Pork is essentially a poor man's food and consumption of pork maintains itself relatively well in periods of industrial depression. Consumption of beef, on the other hand, bears a very close relation to urban employment or unemployment and declines rapidly in periods of industrial depression.

Digitized by Google

Chart G–5 shows graphically the relation between the per capita production, per capita consumption, and net exports of pork and pork products and lard, and the price of hogs and the combined price of pork and lard.

CHART G–5.



The following Table, G–40, gives the statistical data in actual figures and indexes upon which the chart was based.

Digitized by Google

TABLE G–40.—*Pork and lard.*

Year.	Production.			Relative production, 1910–1914=100.[1]	Per capita production.[1]	Exports of pork and lard.[1]	Net imports of pork and lard.[1]	Net exports of pork and lard.[1]
	Pork.[1]	Lard.[1]	Total pork and lard.[1]					
1910	5,881	1,344	7,225	83	78	692	.....	692
1911	7,511	1,717	9,228	106	99	1,061	.....	1,061
1912	7,189	1,643	8,832	102	93	993	.....	993
1913	7,492	1,713	9,205	106	96	1,031	3	1,028
1914	7,228	1,662	8,890	102	91	837	38	799
1915	8,050	1,840	9,890	114	100	1,393	7	1,386
1916	8,634	1,973	10,607	122	106	1,465	2	1,463
1917	6,901	1,577	8,478	98	83	1,326	10	1,316
1918	9,137	2,089	11,226	129	109	2,279	97	2,182
1919	9,269	2,119	11,388	131	109	2,681	11	2,670
1920	8,470	1,936	10,406	120	100	1,561	6	1,556

Year.	Per cent of product exported.	Weighted price index of pork and lard.	Apparent consumption.[1]	Relative per capita production.	Relative net exports, 1910–1914=100.	Per capita consumption.	Relative per capita consumption.	Relative price of hogs, heavy, per 100 pounds.
1910	9.5	108	6,533	86	75	71	87	112
1911	11.0	87	8,169	108	115	87	107	84
1912	11.0	93	7,839	102	108	82	101	95
1913	11.0	105	8,171	105	112	84	103	105
1914	8.9	106	8,084	100	87	82	101	104
1915	14.0	94	8,504	109	151	86	106	89
1916	13.7	122	9,144	116	159	91	112	120
1917	15.5	186	7,162	91	144	70	86	196
1918	19.4	221	9,044	119	238	87	107	220
1919	23.4	241	8,718	119	291	83	102	228
1920	14.9	195	8,850	109	170	83	102	178

Year and month.	Actual figures.			Relative figures, 1910–1914=100.			Weighted index of prices of pork and lard.
	Exports of pork and lard.[1]	Imports of pork and lard.[1]	Net export of pork and lard.	Export.	Imports.	Net export.	
1919.							
January	197.9	0.3	197.6	260	79	260	224
February	236.4	.2	236.1	310	59	310	223
March	341.2	.3	340.9	446	81	449	234
April	348.0	.1	347.8	457	45	458	255
May	180.8	.2	180.6	238	63	238	267
June	400.3	.0	400.3	526	15	526	266
July	258.9	.1	258.8	340	50	341	276
August	179.5	.2	179.2	237	62	236	266
September	117.7	.4	117.2	155	129	154	243
October	117.9	.2	117.7	155	54	155	223
November	131.1	.2	130.9	173	65	172	217
December	144.7	.1	144.6	191	43	190	202
1920.							
January	137.7	.1	137.3	181	33	181	198
February	147.1	.2	146.9	193	61	193	195
March	185.4	.0	185.3	243	12	243	196
April	87.6	.0	87.5	116	18	116	207
May	134.2	.1	134.0	176	38	176	205
June	137.3	.0	137.3	180	13	180	198
July	94.2	.0	94.1	124	9	124	199
August	67.7	.0	67.6	89	12	89	199
September	102.4	.0	102.4	134	13	134	206
October	123.1	.5	122.6	162	140	162	210
November	132.7	.0	132.6	175	18	174	185
December	187.1	.1	187.0	246	32	246	148
1921.							
January	161.6	.0	161.6	213	10	213	145
February	151.3	.0	151.3	198	9	199	140
March	143.1	.1	143.0	188	36	188	149
April	118.1	.0	118.1	155	10	155	146
May	141.0	.0	141.0	185	8	186	135
June	128.9	.0	128.8	170	18	168	133

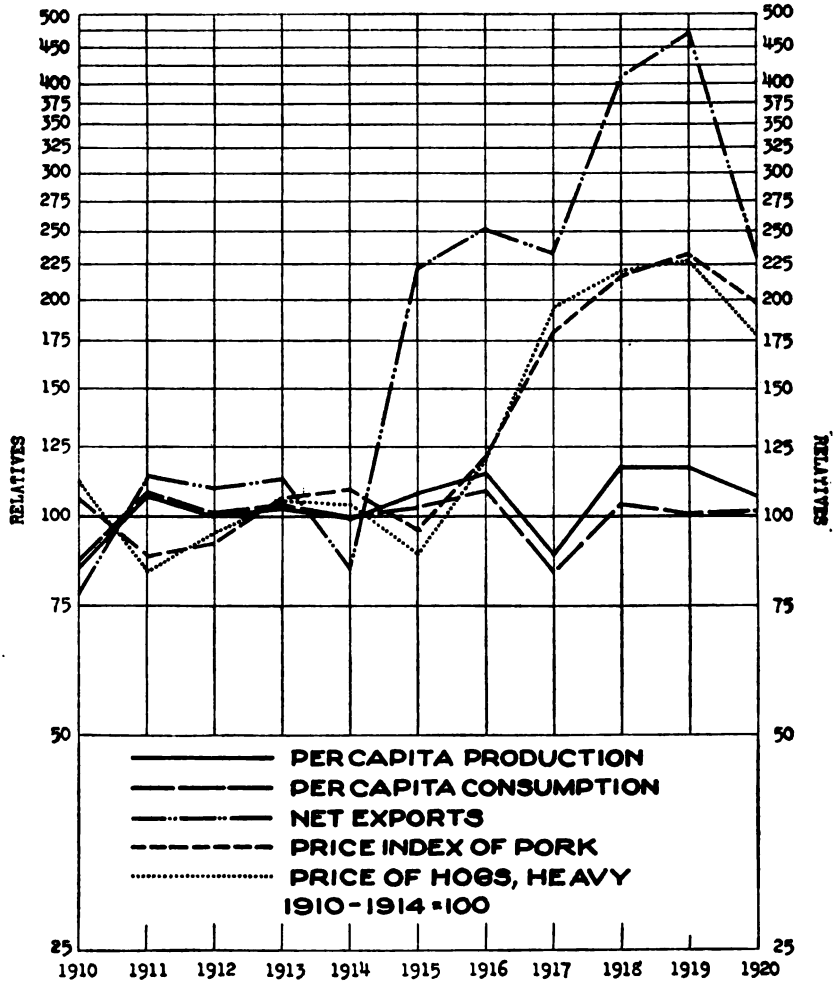
[1] In millions of pounds; ciphers omitted.

Digitized by Google

It will be noted that up to 1913 these lines (chart G–5) ran fairly well together. At the beginning of 1915 exports of pork and pork products and lard began rapidly to rise, but the price of pork and lard and hogs did not begin to rise until nearly a year later. Doubtless a part of this rise in price was due to an increase in exports and the tremendous influence of war demands.

CHART G–6.

THE PRODUCTION, EXPORT, CONSUMPTION AND WHOLESALE PRICE OF PORK BY YEARS, 1910-20



If the prices of pork and lard during this period are reduced to a basis of purchasing power, it will be found that only a part of the rise in price can be attributed to exports, and that the major part of the increase must be attributed to the general causes which induced an increase in prices of commodities.

Digitized by Google

Chart G–6, on page 138, shows the relation between the production of pork and pork products exclusive of lard and the exports of pork and pork products exclusive of lard, the per capita consumption exclusive also of lard, price of hogs, and the price of pork from 1910 to 1920 on the 1910–1914 base.

The general course of these elements as shown by this chart is not much different from the course indicated in chart G–5 on page 136, which is based upon the same products, including lard.

Chart G–7, on page 141, shows the relation of the same factors included in the preceding chart, G–6, page 138, by months, from January, 1919, to June, 1921.

It will be noted that there is apparently a very definite relation between the price of pork and pork products and hogs, and the exports of these products. With some irregularity the price of hogs has fallen in periods of falling exports and has risen as exports have increased.

Both charts G–6 and G–7 indicate the close relation sustained between the price of pork and the price of hogs.

Table G–41 and G–42, page 142, exhibit the statistical data and indexes from which the charts on page 138 and page 141 were drawn.

TABLE G–41.—*Pork.*

ACTUAL FIGURES BY YEARS.

Year.	Million pounds.					Pounds.		Per cent of product exported.	Weighted Index of pork price, 1910–1914=100.	Relative price of hogs (heavy) per 100 pounds, 1910–1914=100.
	Total production.[1]	Exports calendar years.[2]	Imports (less reexports) calendar years.	Net exports.	Amount average for consumption.[3]	Per capita production.	Per capita consumption.			
1910	5,881	313	.....	313	5,568	64	60.3	5.3	.....	.....
1911	7,511	456	.....	456	7,055	80	75.1	6.0	.....	.....
1912	7,189	440	.....	440	6,749	75	70.6	6.1	.....	.....
1913	7,492	456	3	453	7,039	77	72.5	6.0	.....	.....
1914	7,228	377	38	339	6,889	74	69.9	4.6	.....	.....
1915	8,050	906	7	899	7,151	81	72.0	11.0	.....	.....
1916	8,634	1,011	2	1,009	7,625	86	75.7	11.6	.....	.....
1917	6,901	943	10	933	5,968	67	58.4	13.5	.....	.....
1918	9,137	1,724	97	1,627	7,510	88	72.5	17.8	.....	.....
1919	9,269	1,897	11	1,886	7,383	88	70.3	20.3	.....	.....
1920	8,470	925	6	919	7,551	80	71.0	10.8	.....	.....
RELATIVE FIGURES, BY YEARS (1910–1914=100).										
1910	83	77	.....	78	84	85	87	95	106	112
1911	106	112	.....	114	106	107	108	107	88	84
1912	102	108	.....	110	101	100	101	109	92	95
1913	106	112	15	113	106	103	104	107	106	105
1914	102	92	190	85	103	99	100	82	109	104
1915	114	222	35	222	107	108	103	196	96	89
1916	122	248	10	252	115	115	109	207	121	120
1917	98	231	50	233	90	89	84	241	181	196
1918	129	422	485	408	113	117	104	318	217	220
1919	131	463	55	470	111	117	101	363	233	228
1920	120	227	30	230	113	107	102	193	198	178

[1] Federally inspected and other slaughter.
[2] Exports of pork, exclusive of lard, includes bacon, hams, shoulders, canned, fresh and pickled pork.
[3] Production minus exports and reexports and plus imports.
[4] Total supply=slaughter Federally inspected and otherwise, plus imports and storage stocks at beginning of month.
[5] Total supplies minus export and storage at end of month.

Digitized by Google

TABLE G–41.—*Pork*—Continued.
BY MONTHS.

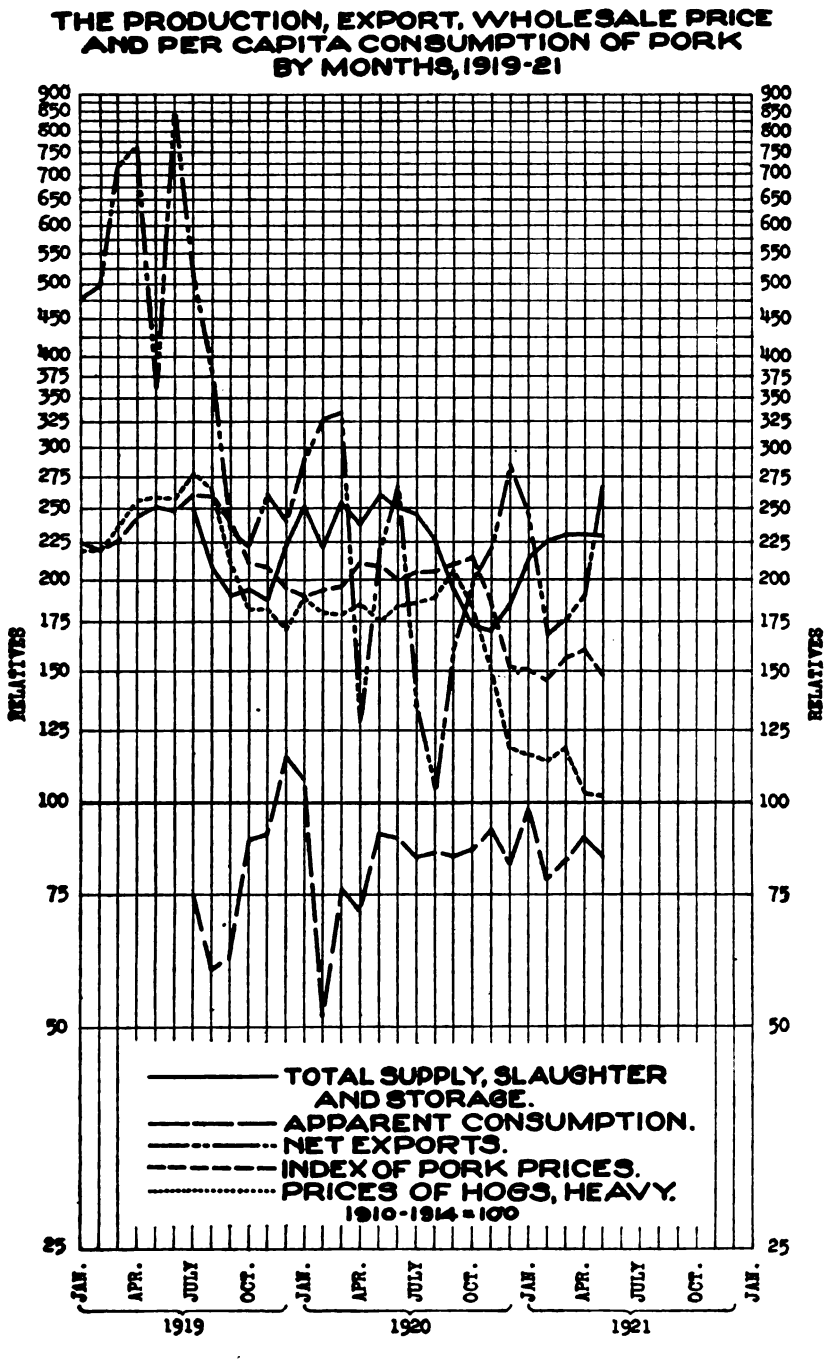
	Actual figures.					
	Total supply [4] (million pounds).	Exports [2] (million pounds).	Imports (million pounds).	Net exports.	Apparent consumption. [3]	Per cent of supply exported.
1919.						
January		160.0	0.3	159.7		
February		167.2	.2	167.0		
March		240.4	.6	240.1		
April		255.9	.1	255.7		
May		124.0	.2	123.7		
June		283.1		283.1		
July	1,468	170.1	.1	170.0	415.3	11.5
August	1,229	128.4	.2	128.1	329.7	10.4
September	1,117	79.3	.4	78.8	345.5	7.0
October	1,157	75.1	.2	74.9	493.1	6.6
November	1,107	88.2	.2	88.0	504.4	7.9
December	1,318	80.8	.1	80.6	639.3	6.1
1920.						
January	1,475	92.0	.1	97.8	600.4	6.2
February	1,305	109.9	.2	109.7	291.9	8.4
March	1,504	112.4		112.3	428.3	7.4
April	1,402	43.9		43.8	397.3	3.1
May	1,540	74.0	.1	73.9	506.3	4.8
June		90.1		90.1		
July	1,452	45.2		45.2	473.7	3.1
August	1,330	35.5		35.4	477.9	2.6
September	1,143	54.2		54.2	472.2	4.7
October	1,023	67.3	.5	66.8	483.1	6.5
November	1,017	74.3		74.2	512.8	7.3
December	1,090	95.8	.1	95.7	461.3	8.7
1921.						
January	1,278	81.8		81.8	542.1	6.9
February	1,334	56.6		56.6	437.9	4.2
March	1,389	59.4	.1	59.3	468.9	4.3
April	1,364	63.7		63.7	499.6	4.6
May	1,363	89.7		89.7	472.2	6.5

	Relative figures.						
	Relative supply.	Relative export.	Relative net export.	Relative consumption.	Relative per cent of supply exported.	Weighted index of prices of pork.	Relative price of hogs (heavy), 1910–1914=100.
1919.							
January		475	476			225	219
February		497	497			220	220
March		714	715			226	227
April		760	762			244	256
May		369	363			252	259
June		842	843			249	258
July	250	505	506	75	221	261	278
August	209	382	382	60	200	260	266
September	190	236	235	62	134	240	212
October	194	223	223	89	127	212	183
November	188	262	262	91	152	209	183
December	224	240	240	115	117	196	171
1920.							
January	251	291	291	108	119	190	189
February	222	327	327	52	162	194	181
March	255	334	334	76	142	196	180
April	238	130	130	72	60	212	185
May	261	220	220	91	92	209	175
June	250	268	268	90		200	184
July	246	135	135	85	60	205	186
August	226	105	105	86	50	206	189
September	194	161	161	85	90	211	207
October	173	200	199	87	125	215	185
November	171	221	221	92	140	187	151
December	185	285	285	83	167	152	119
1921.							
January	215	243	244	98	133	151	116
February	226	168	169	79	81	147	114
March	231	177	177	84	83	157	118
April	231	189	190	90	88	160	108
May	230	267	267	85	125	149	102
June						144	101

See page 139 for footnotes.

Digitized by Google

CHART G-7.



Digitized by Google

TABLE G–42.—*Price series composing the price index of pork and pork products.*

Years and months.	Monthly average price.							Index of pork prices.	Index of lard prices.	Index of pork and pork products.
	Bacon, rough sides (lbs.).	Bacon, short clear sides (lbs.).	Hams smoked (lbs.).	Salt, mess pork (barrel).	Fresh loins, Chicago (lbs.).	Loins, western New York (lbs.).	Lard, prime contract (lbs.).			
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			
1910	0.129	0.133	0.164	23.738	0.140	0.142	0.125	106	117	108
1911	.093	.095	.140	19.159	.126	.129	.091	88	85	87
1912	.108	.111	.143	19.285	.129	.132	.105	92	98	93
1913	.124	.127	.166	22.471	.149	.152	.110	106	103	105
1914	.130	.132	.167	22.736	.154	.163	.104	109	97	106
1915	.113	.116	.153	18.317	.143	.148	.094	96	88	94
1916	.146	.149	.185	26.770	.162	.170	.135	121	126	122
1917	.238	.248	.252	41.765	.244	.245	.217	181	203	186
1918	.261	.279	.318	48.240	.295	.312	.255	217	238	221
1919	.266	.291	.343	52.190	.315	.350	.290	233	271	241
1920	.192	.207	.333	37.273	.307	.315	.199	198	186	195
1919.										
January	.263	.289	.349	50.375	.295	.309	.238	225	222	224
February	.266	.283	.334	49.625	.270	.320	.252	220	235	223
March	.282	.305	.338	50.125	.294	.311	.280	226	262	234
April	.295	.326	.360	55.000	.320	.345	.313	244	292	255
May	.305	.331	.377	57.688	.322	.350	.342	252	320	267
June	.302	.333	.381	58.250	.300	.338	.347	249	324	266
July	.303	.337	.384	58.900	.343	.385	.351	261	328	276
August	.303	.333	.384	57.063	.352	.380	.306	260	286	286
September	.249	.274	.348	50.150	.378	.385	.271	240	253	243
October	.208	.227	.290	44.125	.345	.384	.280	212	262	223
November	.216	.232	.286	46.667	.288	.388	.259	209	242	217
December	.207	.226	.289	47.050	.251	.303	.240	196	224	202
1920.										
January	.204	.221	.294	44.875	.244	.276	.241	190	225	198
February	.207	.220	.306	43.438	.273	.278	.210	194	196	195
March	.197	.211	.316	42.300	.293	.283	.210	196	196	196
April	.204	.219	.331	42.813	.342	.345	.200	212	187	207
May	.200	.218	.356	42.250	.283	.341	.208	209	194	205
June	.198	.212	.365	40.400	.278	.276	.206	200	193	198
July	.193	.207	.377	36.250	.328	.299	.191	205	178	199
August	.186	.200	.373	32.900	.368	.318	.189	206	177	199
September	.188	.202	.363	31.000	.403	.363	.201	211	188	206
October	.203	.217	.358	30.500	.384	.405	.206	215	192	210
November	.178	.191	.307	30.800	.293	.353	.191	187	178	185
December	.151	.164	.258	29.750	.206	.253	.143	152	134	148
1921.										
January	.136	.143	.249	29.750	.218	.271	.136	151	127	145
February	.132	.144	.260	31.500	.193	.233	.125	147	117	140
March	.142	.154	.273	30.100	.253	.258	.122	159	114	149
April	.136	.139	.276	28.063	.270	.281	.105	160	98	146
May	.126	.134	.273	25.350	.223	.264	.097	149	91	135
June	.128	.138	.282	24.250	.195	.245	.102	144	95	133
July	.129	.142	.320	24.500	.223	.248	.121	155	113	145

MUTTON AND LAMB.

As indicated in Table H–17, on page 177, the number of sheep on farms have been steadily diminishing in recent years. This diminishing number on farms has been reflected in a declining slaughter of sheep during the last 10 years, with the exception of 1919.

Exports of mutton and lamb have been practically negligible, but imports of mutton and lamb in 1920 were considerable, amounting to 101,000,000 pounds, approximately one-fifth of the total slaughter in the United States. In 1911, 1912, 1913, and 1914 the production of mutton and lamb was considerably in excess of the average for the period 1910 to 1914 and has since been below that average. Consumption has likewise shown a tendency to decrease somewhat,

Digitized by Google

although higher in 1920 than in 1919. On the whole, production of mutton and lamb has been rapidly decreasing, and had it not been for the large imports of 1920 the price of mutton and lamb would doubtless have remained upon a higher level in this country.

The following table, G–43, gives the estimated annual production, exports, imports, and consumption of mutton and lamb in the United States for the calendar years 1907 to 1920.

TABLE G–43.—*Estimated annual production, exports, imports, and consumption of mutton and lamb in the United States.*

[United States Department of Agriculture, Bureau of Animal Industry.]

Year.	Slaughter.							
	Actual number.	Relative increase in number.	Federally inspected.	Other.	Total.	Relative increase in pounds slaughtered.	Pounds per capita.	Relative per capita.
			Million pounds.	*Million pounds.*	*Million pounds.*			
1907	13,300,600	82	431	128	559	85	6.4	93
1908	13,388,800	82	428	127	555	85	6.2	90
1909	14,724,699	91	466	138	604	92	6.6	96
1910	14,800,200	91	463	137	600	92	6.5	94
1911	18,189,500	112	569	169	738	113	7.8	113
1912	19,433,400	120	608	180	788	120	8.3	120
1913	18,689,400	115	569	169	738	113	7.6	110
1914	18,460,500	114	555	165	720	110	7.3	106
1915	15,843,000	98	482	144	626	96	6.3	91
1916	15,492,200	95	472	140	612	94	6.1	88
1917	12,123,800	75	364	109	473	72	4.5	65
1918	13,385,100	82	402	120	522	80	5.0	72
1919	16,480,600	101	482	144	626	96	5.9	86
1920	14,247,800	88	428	128	556	85	5.2	75

Year.	Exports.	Imports (less re-exports).	Consumption.		
			Total.	Per capita.	Relative per capita average, 1907–1916=100.
	Million pounds.	*Million pounds.*	*Million pounds.*	*Pounds.*	*Pounds.*
1907	1	.....	558	6.4	92
1908	1	.....	554	6.2	89
1909	2	.....	602	6.6	95
1910	2	.....	598	6.5	94
1911	3	.....	735	7.8	113
1912	5	.....	783	8.2	118
1913	5	1	734	7.5	108
1914	4	20	736	7.5	108
1915	4	12	634	6.4	92
1916	5	16	623	6.2	89
1917	3	6	476	4.7	68
1918	2	1	521	5.0	72
1919	3	8	631	6.0	87
1920	4	101	653	6.1	88

TOTAL MEAT PRODUCTION AND CONSUMPTION.

The table following, G–44, gives the volume of meat production and of lard production in the United States, and the exports, imports, and actual and relative per capita consumption of meats and lard in United States by years, 1907 to 1920.

Digitized by Google

TABLE G-44.—*Estimated annual production, exports, imports, and consumption of lard and all meats in the United States.*

[United States Department of Agriculture, Bureau of Animal Industry.]

LARD.

Calendar year.	Slaughter.			Exports (million pounds).	Imports, less exports (million pounds).	Total (million pounds).	Consumption.	
	Total (million pounds).	Federal inspected (million pounds).	Other (million pounds).				Per capita (pounds).	Relative per capita average, 1907–1916=100 (pounds).
1907	1,693	993	690	589	.....	1,094	12.5	101
1908	1,834	1,094	760	582	.....	1,272	14.3	115
1909	1,506	888	618	458	.....	1,048	11.6	94
1910	1,344	793	551	379	.....	965	10.5	85
1911	1,717	1,013	704	605	.....	1,112	11.8	95
1912	1,643	969	674	553	.....	1,090	11.4	92
1913	1,713	1,011	702	575	.....	1,138	11.7	94
1914	1,652	975	677	460	.....	1,192	12.1	98
1915	1,840	1,086	754	487	.....	1,353	13.6	110
1916	1,973	1,164	809	454	.....	1,519	15.1	122
1917	1,577	930	647	383	.....	1,194	11.7	94
1918	2,089	1,233	856	555	.....	1,534	14.8	119
1919	2,119	1,250	869	784	.....	1,335	12.7	102
1920	1,936	1,142	794	636	.....	1,300	12.2	98

ALL MEATS.[1]

1907	16,003	9,399	6,604	1,367	.....	14,636	167.4	109
1908	16,067	9,441	6,626	848	.....	15,219	170.9	111
1909	15,060	8,835	6,225	637	.....	14,423	159.0	103
1910	14,502	8,412	6,090	412	.....	14,090	152.5	99
1911	15,946	9,368	6,578	534	.....	15,412	163.9	107
1912	15,162	9,030	6,132	486	.....	14,676	153.5	100
1913	14,640	8,763	5,877	507	41	14,174	145.9	95
1914	14,039	8,585	5,454	475	323	13,887	140.9	92
1915	14,937	9,384	5,553	1,309	129	13,757	138.5	90
1916	15,922	10,248	5,674	1,304	38	14,656	145.5	95
1917	14,740	9,906	4,834	1,322	44	13,462	131.8	86
1918	18,041	12,006	6,035	2,454	210	15,797	152.5	99
1919	17,326	11,320	6,006	2,215	62	15,173	144.5	94
1920	16,051	10,258	5,792	1,093	160	15,118	142.1	92

[1] Includes beef and veal, pork, mutton and lamb, and a very small amount of goat meat.

It will be noted from this table that the output of all meats in 1920 was less than in 1918 or 1919, but greater than in any other year since 1908. Exports of all meats likewise declined in 1920. The production of lard in 1920 was also less than in 1918 or 1919, and somewhat above the average for the 10 years preceding 1918. The per capita consumption of all meats was also less in 1920 than in 1918 or 1919 as was the per capita consumption of lard.

The falling off of exports as well as the falling off of consumption in 1920 of all meat products and lard was doubtless the first cause in the decline in the price of hogs, cattle, and meat products.

The following table, G-45, shows the consumption of different kinds of meats in 1907 to 1920 with index of the relative consumption of each of these classes.

Digitized by Google

TABLE G–45.—*Live-stock consumption per capita, 1907–1920.*[1]

Year.	Beef.	Veal.	Mutton and lamb.	Pork.	Lard.	All meats.
1907	79.7	7.1	6.4	74.1	12.5	167.4
1908	72.4	6.8	6.2	85.4	14.3	170.9
1909	76.2	7.5	6.6	68.6	11.6	159.0
1910	78.1	7.4	6.5	60.3	10.5	152.5
1911	73.9	7.0	7.8	75.1	11.8	163.9
1912	67.5	7.0	8.2	70.6	11.4	153.5
1913	60.8	5.0	7.5	72.5	11.7	145.9
1914	58.9	4.4	7.5	69.9	12.1	140.9
1915	55.6	4.3	6.4	72.0	13.6	138.5
1916	58.1	5.3	6.2	75.7	15.1	145.5
1917	62.0	6.5	4.7	58.4	11.7	131.8
1918	67.8	7.0	5.0	72.5	14.8	152.5
1919	60.0	8.1	6.0	70.3	12.7	144.5
1920	56.4	8.5	6.1	71.0	12.2	142.1
RELATIVE PER CAPITA CONSUMPTION. [1907–1916=100.]						
1907	117	115	92	102	101	109
1908	106	110	89	118	115	111
1909	112	121	95	95	94	103
1910	115	120	94	83	85	99
1911	109	113	113	104	95	107
1912	99	113	118	97	92	100
1913	89	81	108	100	94	95
1914	87	71	108	97	98	92
1915	82	70	92	99	110	90
1916	85	86	89	105	122	95
1917	91	105	68	81	94	86
1918	100	113	72	100	119	99
1919	88	131	87	97	102	94
1920	83	138	88	98	98	92

[1] Data supplied by U. S. Department of Agriculture.

DAIRY PRODUCTS.

Table G–46 gives the production, storage, and price of butter from May, 1918, to June, 1921, while Table G–47, on page 146, gives the actual and relative exports and imports of butter in the United States.

TABLE G–46.—*Production, storage, and price of butter, May, 1918, to June, 1921.*

	Production.	Storage.	Price.		Production.	Storage.	Price.
1918.	*Pounds.*	*Pounds.*		1920.	*Pounds.*	*Pounds.*	
May	85,563,665	9,536,000	$0.420	January	41,718,672	53,737,000	$0.620
June	104,385,066	12,697,000	.415	February	39,394,307	38,359,000	.630
July	97,440,132	49,140,000	.425	March	47,848,671	22,526,000	.640
August	85,148,427	88,305,000	.435	April	58,935,911	12,521,000	.642
September	72,386,845	99,334,000	.500	May	84,459,757	7,487,878	.575
October	63,885,631	87,883,000	.550	June	111,345,360	12,722,532	.538
November	45,741,353	80,874,000	.610	July	105,113,000	52,363,265	.555
December	45,560,340	65,110,000	.673	August	86,069,000	123,545,670	.....
1919.				September	73,144,000	131,388,414	.....
January	52,189,198	43,910,000	.660	October	64,968,000	121,816,159	.580
February	44,342,568	36,776,000	.455	November	53,398,000	101,728,171	.....
March	54,822,396	24,191,000	.598	December	52,205,000	79,889,352	.490
April	67,487,317	11,909,000	.610	1921.			
May	103,941,021	9,659,000	.555	January	.....	58,752,592	.485
June	119,357,493	29,435,000	.515	February	.....	41,529,601	.450
July	104,751,266	90,158,000	.520	March	.....	26,773,397	.455
August	84,840,310	123,546,000	.530	April	.....	14,737,011	.460
September	69,102,578	131,388,000	.553	May	.....	7,494,426	.....
October	58,722,557	121,834,000	.635	June	.....	21,764,174	.....
November	45,040,656	100,474,000	.678				
December	46,662,021	74,887,000	.718				

Digitized by Google

TABLE G–47.—*The actual and relative export, import, reexport, and net export of all butter from the United States, 1909–1921.*

[1909–1913=100.]

[Commerce Reports.]

Years and months.	Exports.		Imports.		Reexports (pounds).	Net exports (pounds).	Prices of butter, creamery, extra, Chicago (per pound).
	Pounds.	Relative.	Pounds.	Relative.			
1909–10	5,981,265	140	1,360,245	55	10,194	4,631,214	.....
1910–11	3,140,545	74	1,007,826	41	9,135	2,141,864	.....
1911–12	4,877,797	115	1,025,668	41	40,151	3,892,280	.....
1912–13	3,585,600	84	1,162,253	47	3,432	2,426,779	$0.310
1913–14	3,693,597	87	7,842,022	316	51,935	.....	.....
1914–15	9,850,704	231	3,828,227	154	148,696	6,171,173	.287
1915–16	13,487,481	317	712,998	29	21,265	12,795,748	.284
1916–17	26,835,092	629	523,573	21	2,610	26,314,129	.325
1917–18	17,735,966	417	1,805,925	73	218	15,930,259	.411
1918–19	33,739,960	793	4,131,469	167	3,476	29,611,967	.495
1919–20	27,155,834	638	20,770,959	838	101,697	6,486,572	.586
1920–21	7,829,255	184	34,343,653	1,385	.....	.....	.....
1919.							
January	4,452,371	1,255	644,252	312	.....	3,808,119	.618
February	3,726,840	1,051	363,761	176	.....	3,363,079	.493
March	4,127,635	1,164	661,980	320	.....	3,465,655	.602
April	8,475,618	2,390	219,932	106	3,476	8,259,162	.615
May	759,803	214	893,245	432	.....	.....	.556
June	810,763	229	508,925	246	.....	301,838	.513
July	633,764	179	654,887	317	.....	.....	.512
August	2,395,139	675	961,718	466	13,456	1,446,877	.533
September	1,387,148	391	496,442	240	.....	.....	.569
October	2,918,389	823	2,123,398	1,027	3,400	890,706	.646
November	1,108,896	313	1,553,263	752	605	.....	.686
December	3,760,119	1,060	437,565	211	.....	3,322,554	.681
1920.							
January	1,899,196	535	334,135	162	22,400	1,587,461	.631
February	4,268,360	1,203	1,095,813	530	29,460	3,204,007	.622
March	6,396,823	1,803	3,151,640	1,525	.....	3,245,183	.663
April	779,216	220	5,065,020	2,451	1,000	.....	.639
May	886,552	250	1,710,519	828	31,044	.....	.571
June	696,232	196	3,186,559	1,542	432	.....	.549
July	576,892	163	8,311,404	4,022	146	.....	.553
August	436,214	123	2,736,879	1,325	.....	.....	.540
September	327,482	92	2,595,024	1,256	44,800	.....	.566
October	383,808	108	2,455,315	1,188	.....	.....	.568
November	306,326	86	2,798,684	1,355	10,812	.....	.590
December	504,634	142	4,033,754	1,952	23,734	.....	.508
1921.							
January	575,598	162	3,811,905	1,845	128,061	.....	.483
February	968,803	273	1,896,938	918	122,832	.....	.476
March	1,355,061	382	4,265,581	2,065	472,663	.....	.469
April	1,106,566	312	1,370,222	663	230,227	.....	.450
May	647,118	182	54,637	27	38	592,519	.292
June	640,753	180	33,884	16	.....	606,769	.319

Butter prices started to break at Chicago in December, 1919, and throughout the country generally in January, 1920. Butter in cold storage, as indicated by Table G–46, was 131,000,000 pounds in September, 1919, at the high point. Exports of butter, as indicated by Table G–47, were highest in April, 1919. Total exports of butter in the fiscal year 1920–21 were only 7,000,000 pounds, as against 27,000,000 pounds in 1919–20, and 33,000,000 pounds in 1918–19. Imports of butter in 1920–21 were 34,000,000 pounds, as against 20,000,000 pounds in 1919–20, and imports continued at a very considerable rate during all of that year and until April, 1921.

The following table, G–48, gives the production, storage, and price of full cream cheese at New York monthly from May, 1918, to June, 1921:

Digitized by Google

TABLE G–48.—*Production, storage, and price of full cream cheese, New York, May, 1918, to June, 1921.*

	Production.	Storage.	Price.		Production.	Storage.	Price.
1918.	*Pounds.*	*Pounds.*		1920.	*Pounds.*	*Pounds.*	
May	33,190,847	24,638,795	$0.223	January	8,761,483	53,342,523	$0.314
June	42,391,489	22,615,267	.231	February	9,731,586	44,401,676	.294
July	36,819,027	32,908,952	.239	March	12,587,526	33,991,787	.285
August	31,695,294	50,893,769	.253	April	19,187,755	23,231,941	.286
September	26,998,497	56,931,927	.268	May	30,157,286	16,690,162	.300
October	19,899,779	42,055,562	.325	June	40,493,728	13,460,491	.280
November	13,028,605	33,538,453	.333	July	32,687,000	29,573,411	.265
December	9,967,380	25,270,797	.363	August	25,418,000	51,334,143	.....
1919.				September	21,884,000	60,530,069	.....
January	11,989,816	20,153,507	.368	October	20,409,000	58,005,878	.278
February	12,524,012	15,990,805	.295	November	13,529,000	48,619,940	.....
March	19,830,742	10,165,300	.321	December	19,530,000	40,096,106	.225
April	22,965,423	7,353,687	.315	1921.			
May	36,624,636	6,614,732	.324	January	.....	34,186,306	.230
June	46,989,500	12,477,707	.308	February	.....	25,191,720	.228
July	37,019,242	37,501,294	.315	March	.....	17,434,880	.255
August	32,179,134	62,645,144	.308	April	.....	14,737,011	.223
September	27,071,290	76,660,790	.298	May	.....	13,413,644	.....
October	23,740,778	81,359,470	.303	June	.....	17,767,752	.....
November	13,586,331	72,888,936	.319				
December	10,499,650	62,297,741	.315				

The following table, G–49, gives the actual and relative export, import, reexport, and net export of cheese from the United States for the fiscal years beginning 1909–10 and ending January, 1921, and by months beginning January, 1919, to and including June, 1921:

TABLE G–49.—*The actual and relative export, import, reexport, and net export of all cheese from the United States, 1909–1921.*

[1909–1913—100.]

[Commerce reports.]

	Exports.		Imports.		Reexports (pounds).	Net exports (pounds).	Prices of cheese, whole milk, New York.
	Pounds.	Relative.	Pounds.	Relative.			
1909–10	6,822,842	136	40,817,524	83	138,754	.....	.....
1910–11	2,846,709	57	45,568,797	93	106,178	.....	$0.157
1911–12	10,366,088	207	46,542,007	95	104,980	.....	.140
1912–13	2,599,058	52	49,387,944	100	101,914	.....	.165
1913–14	2,427,577	484	63,784,313	130	152,244	.....	.154
1914–15	55,362,917	1,105	50,138,520	102	294,776	5,519,173	.152
1915–16	44,394,301	886	30,087,999	61	267,201	14,573,503	.151
1916–17	66,050,013	1,318	14,481,541	29	169,976	51,738,448	.181
1917–18	44,308,706	884	9,839,305	20	122,187	34,586,588	.241
1918–19	18,791,553	375	2,442,306	5	30,825	16,380,072	.268
1919–20	19,378,158	387	17,913,682	36	3,064,316	4,528,792	.315
1920–21	10,825,603	216	16,584,678	34	.....	.....	.....
1919.							
January	384,554	92	106,350	3	1,042	279,246	.368
February	397,016	95	19,382	5	20	377,654	.295
March	963,109	230	16,122	3	4,785	947,772	.321
April	1,722,721	412	166,363	4	4,638	1,560,996	.315
May	1,732,286	415	1,058,462	26	25	673,849	.324
June	2,331,799	558	80,281	2	4,825	2,256,343	.308
July	988,788	237	35,225	8	27,321	980,884	.315
August	805,213	193	1,375,617	34	715	.....	.308
September	671,334	161	1,656,053	40	66,433	.....	.298
October	1,094,041	262	1,787,603	44	121,433	.....	.303
November	1,765,781	423	3,547,276	86	152,704	.....	.319
December	1,303,079	312	1,483,470	36	43,160	.....	315

Digitized by Google

TABLE G-49.—*The actual and relative export, import, reexport, and net export of all cheese from the United States, 1909–1921*—Continued.

	Exports.		Imports.		Reexports (pounds).	Net exports (pounds).	Prices of cheese, whole milk, New York.
	Pounds.	Relative.	Pounds.	Relative.			
1920.							
January	1,310,430	314	1,155,278	28	51,073	206,225	$0.314
February	1,193,648	286	667,497	16	1,020,627	1,546,778	.294
March	1,793,922	429	1,335,924	33	62,323	520,321	.285
April	1,842,317	441	740,158	18	302,479	1,404,638	.286
May	4,408,948	1,056	2,307,554	56	1,092,535	3,193,929	.300
June	2,119,437	507	1,822,027	44	223,513	520,923	.290
July	550,000	132	1,042,791	25	68,548	.....	.265
August	374,538	90	660,963	16	4,293	.....	.....
September	362,791	87	961,450	23	942	.....	.....
October	608,163	146	1,780,698	43	40,183	.....	.278
November	645,923	155	1,739,351	42	13,599	.....	.....
December	1,002,982	240	1,780,034	43	5,194	.....	.225
1921.							
January	1,219,667	292	1,844,115	45	17,165	.....	.230
February	908,950	218	713,324	17	11,691	207,317	.228
March	672,706	161	1,342,192	33	9,119	.....	.255
April	1,664,287	398	1,558,123	38	12,131	118,295	.223
May	1,962,073	470	1,469,677	36	24,541	516,937	.....
June	856,313	205	1,691,960	41	.....	.....	.....

Imports of cheese exceeded exports of cheese in the years from 1909 to 1914, but from 1914 to 1920 exports of cheese exceeded imports of cheese. In the fiscal year 1920–21 imports of cheese again exceeded exports of cheese. Our largest net exports of cheese were in the fiscal year 1916–17, after which exports declined until in the fiscal year 1919–20, when exports of cheese were but a fraction of what they had been in 1916–17, while, as previously stated, in 1920–21 imports exceeded exports. The break in price of cheese was about simultaneous with the break in price of butter and was doubtless influenced by the same factors.

The real revolution in the character of our dairy export trade during the war period came in condensed and in evaporated milk. In the five-year period ending June 30, 1914, we exported an average of 15,773,900 pounds of condensed milk. In 1918–19 we exported over 700,000,000 pounds. In 1920–21 this export had fallen off to 266,000,000 pounds. Exports of condensed milk reached their peak in June, 1919, and have since rapidly declined. The increase of exports of condensed milk was doubtless largely due to requirements of armies in Europe and the demands of European civilian populations.

Table G–50, on page 149, gives the actual and relative exports, imports, reexports, and net exports of condensed milk from the United States for the fiscal years 1909–10 to 1920–21 and by months from January, 1919, to June, 1921.

Digitized by Google

TABLE G–50.—*The actual and relative exports, imports, reexports, and net exports of condensed milk* [1] *from the United States, 1909–1921.*

[1909–1913=100.]

[Commerce Reports.]

Years and months.	Exports.		Imports.	Reexports.	Net exports.	
	Pounds.	Relative.			Pounds.	Relative.
1909–10	13,311,318	84			13,311,318	84
1910–11	12,180,445	77			12,180,445	77
1911–12	20,642,738	131			20,642,738	131
1912–13	16,525,918	105			16,525,918	105
1913–14	16,209,082	103			16,209,082	103
1914–15	37,235,627	236			37,235,627	236
1915–16	159,577,620	1,012			159,577,620	1,012
1916–17	259,141,231	1,643			259,141,231	1,643
1917–18	528,759,232	3,352			528,759,232	3,352
1918–19	728,740,509	4,620	20,183,723	189,150	708,745,936	4,492
1919–20	710,533,270	4,504	19,060,642	851,542	692,304,170	4,499
1920–21	266,506,031	1,689	19,272,528		247,233,503	1,567
1919.						
January	40,789,433	3,103	122,634		40,666,799	3,094
February	49,399,574	3,758	818,499		48,581,075	3,696
March	48,703,690	3,705	1,763,279		46,940,411	3,571
April	94,068,780	7,156	2,125,645		91,943,135	6,995
May	76,387,474	5,811	2,755,962		73,631,512	5,602
June	114,835,626	8,736	1,692,706	189,150	113,332,070	8,622
July	64,447,367	4,903	2,363,278	58,200	62,142,289	4,727
August	65,811,556	5,007	1,025,831	121,250	64,906,975	4,938
September	62,558,786	4,759	1,097,974	314,250	61,775,062	4,700
October	88,801,528	6,756	870,055	269,642	88,201,115	6,710
November	70,278,203	5,346	623,934		69,654,269	5,299
December	76,783,397	5,841	1,249,442		75,533,955	5,746
1920.						
January	45,597,523	3,469	2,574,763		43,022,760	3,273
February	43,941,309	3,343	1,689,294	25,500	42,277,515	3,216
March	50,314,017	3,828	1,250,926	62,700	49,126,391	3,737
April	51,617,143	3,927	1,436,055		50,181,088	3,818
May	45,937,320	3,495	702,811		45,234,509	3,441
June	44,459,917	3,382	4,196,279		40,263,638	3,063
July	27,779,258	2,113	4,584,718	5,280	23,199,820	1,765
August	25,638,722	1,950	2,628,895		23,009,827	1,750
September	21,364,536	1,625	1,190,632		20,173,904	1,535
October	20,209,141	1,537	1,560,298		18,648,843	1,419
November	17,287,361	1,315	978,867		16,308,494	1,241
December	20,058,590	1,526	962,242	110,000	19,206,348	1,461
1921.						
January	30,714,688	2,337	162,659		30,552,029	2,324
February	22,071,301	1,680	1,600,135		20,471,166	1,557
March	28,434,365	2,163	1,412,500		27,021,864	2,056
April	21,073,620	1,603	1,152,509	3,738	19,924,849	1,516
May	9,330,493	710	2,684,392		6,646,101	506
June	22,433,806	1,707	354,681		22,079,125	1,680

[1] Includes condensed, evaporated, and powdered milk.

Table G–51, page 150, gives the actual export and import of all dairy products in pounds and in relatives on 1909–1913 base by fiscal years from 1909–10 to 1920–21 and by months from January, 1919, to June, 1921.

Digitized by Google

TABLE G-51.—*The actual and relative export, import, reexport, and net export of all dairy products[1] from the United States, 1909–1921.*

[1909–1913=100.]

[Commerce Reports.]

	Exports.		Imports.		Reexports (pounds).	Net exports (pounds).
	Pounds.	Relative.	Pounds.	Relative.		
1909–10	12, 804, 107	61	42, 177, 769	81	148, 948	.....
1910–11	19, 298, 572	92	46, 576, 623	90	115, 313	.....
1911–12	27, 424, 250	131	47, 567, 675	92	145, 131	.....
1912–13	22, 710, 576	109	50, 550, 197	98	105, 346	.....
1913–14	22, 320, 256	106	71, 626, 335	138	204, 179	.....
1914–15	102, 449, 248	490	53, 966, 747	104	443, 672	48, 926, 173
1915–16	217, 459, 402	1, 040	30, 800, 907	60	288, 466	186, 946, 871
1916–17	352, 036, 336	1, 683	15, 006, 067	29	172, 586	337, 193, 835
1917–18	586, 708, 274	2, 806	11, 645, 230	22	122, 405	575, 275, 449
1918–19	781, 272, 022	3, 736	26, 757, 498	52	223, 451	654, 737, 975
1919–20	757, 067, 262	3, 620	57, 765, 283	112	4, 017, 555	703, 319, 534
1920–21	285, 100, 889	1, 363	70, 200, 859	136	.....	214, 960, 090
1919.						
anuary	45, 626, 358	2, 618	873, 236	20	1, 042	44, 754, 164
February	53, 523, 430	3, 070	1, 201, 642	28	20	52, 321, 808
March	53, 794, 434	3, 087	2, 441, 381	57	785	51, 353, 838
April	104, 257, 119	5, 979	2, 511, 940	58	8, 114	101, 763, 298
May	78, 879, 563	4, 527	4, 707, 669	109	25	74, 171, 919
June	117, 978, 188	6, 771	2, 281, 912	53	193, 975	115, 890, 251
July	66, 039, 919	3, 793	3, 053, 390	71	85, 521	63, 102, 050
August	69, 011, 908	3, 960	3, 363, 166	78	135, 421	65, 184, 163
September	64, 617, 268	3, 707	3, 250, 469	75	390, 683	61, 747, 482
October	92, 813, 958	5, 325	4, 781, 056	111	391, 075	88, 423, 977
November	73, 152, 880	4, 195	5, 724, 473	133	153, 309	67, 581, 716
December	81, 846, 595	4, 694	3, 170, 477	74	43, 160	78, 719, 368
1920.						
January	48, 807, 149	2, 800	4, 064, 176	94	73, 473	44, 816, 446
February	49, 403, 317	2, 835	3, 452, 604	80	1, 075, 587	47, 026, 300
March	58, 505, 362	3, 357	5, 738, 490	133	125, 023	52, 891, 895
April	54, 238, 676	3, 110	7, 241, 233	168	303, 479	47, 300, 922
May	51, 232, 820	2, 938	4, 720, 384	110	1, 123, 579	47, 635, 515
June	47, 355, 586	2, 720	9, 204, 365	214	223, 945	38, 384, 666
July	28, 906, 150	1, 658	13, 938, 913	324	68, 974	15, 036, 211
August	26, 449, 474	1, 518	6, 026, 737	140	4, 293	20, 427, 030
September	22, 054, 809	1, 266	4, 747, 106	110	45, 742	17, 353, 445
October	21, 201, 112	1, 217	5, 796, 311	135	40, 183	15, 444, 984
November	18, 239, 610	1, 044	5, 516, 902	128	24, 411	12, 747, 119
December	21, 566, 206	1, 240	6, 776, 030	157	138, 928	14, 929, 103
1921.						
January	32, 509, 953	1, 865	5, 818, 679	135	145, 226	26, 836, 500
February	23, 949, 054	1, 371	4, 210, 397	98	134, 523	19, 873, 179
March	30, 462, 132	1, 744	7, 020, 273	163	481, 782	23, 923, 641
April	23, 844, 473	1, 368	4, 080, 854	95	246, 096	20, 009, 715
May	11, 939, 684	683	4, 208, 706	98	24, 579	7, 755, 556
June	23, 930, 872	1, 371	2, 080, 425	99	.....	.....

[1] Includes all cheese, butter, condensed, evaporated, and powdered milk.

The net exports of all dairy products were highest in the fiscal year 1919–20, amounting to 703,000,000 pounds. In the fiscal year 1920–21 net exports declined to 214,000,000 pounds. Imports of all dairy products in 1919–20 were 57,000,000 pounds and increased to 70,000,000 pounds in 1920–21.

The peak of exports of all dairy products was reached in June, 1919, after which they declined rapidly. Imports of dairy products, on the other hand, were highest in July, 1920, during the period of the greatest decline in the prices of dairy products in the United States.

Digitized by Google

VEGETABLE OILS.

Exports and imports of vegetable oils are considerable factors in determining the price of butter.

The following table, G–52, gives the actual exports and imports of vegetable oils and the relative exports and imports on the 1909–1913 base by fiscal years beginning 1909–10 and including 1920–21, and by months from January, 1919, to June, 1921:

TABLE G–52.—*The total actual and relative exports, imports, reexports, and net exports of vegetable oils,*[1] *1909–1921.*

[1909–1913=100.]

[Commerce Reports.]

Year and month.	Exports.		Imports.		Reexports.	Net exports.	Net imports.
	Pounds.	Relative.	Pounds.	Relative.			
1909–10	407,596,636	139	222,273,108	90	643,064	185,966,592	
1910–11	235,254,334	80	203,243,600	82	828,079	32,838,813	
1911–12	278,859,025	95	252,690,946	102	1,169,626	27,337,705	
1912–13	335,393,852	114	243,197,650	98	751,502	92,947,704	
1913–14	211,244,655	72	314,379,361	127	1,549,565		101,585,141
1914–15	336,156,180	115	244,775,555	99	1,178,206	92,558,811	
1915–16	275,478,883	94	358,212,888	145	1,876,754		80,857,251
1916–17	167,691,527	57	438,489,562	177	6,067,971		264,730,064
1917–18	102,611,095	35	779,122,543	315	4,944,100		671,567,438
1918–19	179,804,447	61	804,392,682	325	20,556,910		604,031,325
1919–20	396,702,411	135	847,218,948	343	16,952,944		433,563,593
1920–21	306,708,115	104	346,732,851	140			40,023,736
1919.							
January	26,577,729	109	58,722,679	285	1,648,308		30,496,642
February	32,116,441	132	81,449,069	397	784,945		48,547,683
March	19,803,287	81	72,253,193	352	208,437		52,241,469
April	14,172,171	58	41,600,669	202	1,306,172		26,122,326
May	12,936,978	53	64,795,420	315	3,555,305		48,303,137
June	30,875,809	126	48,403,154	235	11,558,112		5,969,233
July	39,779,153	163	123,085,245	597	3,258,758		80,047,324
August	38,957,393	159	89,252,821	433	2,761,421		47,534,007
September	34,637,897	142	69,329,149	336	2,192,616		32,498,635
October	42,026,709	172	76,397,750	370	1,434,815		32,936,226
November	31,739,188	130	57,724,648	280	333,514		25,651,946
December	33,913,505	139	64,782,206	315	322,979		30,545,722
1920.							
January	28,950,639	118	49,892,767	242	2,322,062		18,620,066
February	31,858,800	130	66,270,354	322	592,848		33,818,706
March	34,550,101	141	71,159,125	345	1,773,631		34,835,393
April	35,596,422	145	91,550,563	444	253,884		55,700,257
May	24,028,670	98	49,951,935	243	1,109,723		24,813,542
June	20,665,005	84	50,088,655	243	637,644		28,786,006
July	6,178,148	25	54,806,448	266	395,003		48,293,297
August	4,002,777	16	41,377,055	201	541,658		36,832,620
September	6,339,410	26	37,534,947	182	714,418		30,481,119
October	9,668,737	40	28,894,122	140	274,443		18,950,942
November	26,487,233	108	17,667,944	86	349,170	9,168,459	
December	44,523,211	182	20,139,024	98	559,162	24,893,349	
1921.							
January	72,902,278	299	21,109,225	102	296,940	52,089,993	
February	40,891,390	167	34,405,895	167	497,679	6,983,174	
March	37,153,565	152	11,079,690	54	450,604	26,524,479	
April	22,104,420	90	45,451,550	221	796,572		22,550,558
May	20,657,831	84	13,872,749	67	110,553	6,895,635	
June	15,846,579	65	12,792,112	62		3,054,467	

[1] Includes Chinese nut, cocoa butter, coconut, cotton seed, olive oil (edible and inedible), palm, palm kernel, peanut, rapeseed, and soya bean.

During the fiscal years 1909–10 to 1912–13 inclusive, exports of vegetable oils exceeded imports. In 1913–14 we imported 100,000,000 pounds of such oil more than we exported, but the balance

Digitized by Google

of trade turned again in our favor by approximately the same amount in 1914–15, since which time imports of vegetable oils have largely exceeded exports.

The following tables, G–53 and G–54, give the kinds of oils imported and exported and the per cent that each bears to the total for the years 1910 and 1920 and January–March, 1921:

TABLE G–53.—*Vegetable oils imported into the United States.*

[Market Reporter.]

	January–March, 1921.	1920	1910		January–March, 1921.	1920	1910
	Per cent.	*Per cent.*	*Per cent.*		*Per cent.*	*Per cent.*	*Per cent.*
Chinese nut	6.6	11.08	(1)	Palm kernel	0.2	0.27	(1)
Cocoa butter	.9	.01	2.19	Peanut	.8	15.53	(1)
Coconut	66.1	34.18	15.11	Rapeseed	3.0	2.10	(1)
Cotton seed	.8	1.50	(1)	Soy bean	4.6	17.82	(1)
Linseed	.9	5.78	(1)				
Olive	6.2	5.07	22.65	Total	100	100	100
Palm	9.9	6.66	60.05				

[1] Imports so small that the quantity was not reported.

TABLE G–54.—*Vegetable oils exported from United States.*

[Market Reporter.]

	January–March, 1921.	1920	1910		January–March, 1921.	1920	1910
	Per cent.	*Per cent.*	*Per cent.*		*Per cent.*	*Per cent.*	*Per cent.*
Chinese nut	0.08	(1)	(1)	Olive	0.04	(1)	(1)
Cocoa butter	.48	1.93	(1)	Palm	.04	(1)	(1)
Coconut	.84	9.23	(1)	Peanut	.32	0.51	(1)
Corn	.66	4.33	4.77	Soy bean	.93	15.63	(1)
Cotton seed	95.82	66.37	94.48				
Linseed	.79	2.00	.75	Total	100	100	100

[1] Exports so small that quantity was not reported.

The following table, G–55, shows the production of lard and lard substitutes, of butter and butter substitutes, and oleomargarine in recent years.

TABLE G–55.—*Production of lard and lard substitutes and of butter and butter substitutes in recent years.*

LARD AND LARD SUBSTITUTES.

Year.	Lard.[1]	Lard substitutes.	Total production.	Lard substitutes.[2]
	Pounds.	*Pounds.*	*Pounds.*	
1920	1,936,000,000	[3] 1,000,000,000	2,936,000,000	34
1918	2,089,000,000	[4] 1,146,000,000	3,235,000,000	35
1917	1,577,000,000	[4] 1,173,000,000	2,750,000,000	42
1916	1,973,000,000	[4] 1,027,000,000	3,000,000,000	34
1914	1,652,000,000	[4] 1,137,000,000	2,789,000,000	40
1912	1,643,000,000	[4] 877,000,000	2,520,000,000	35

[1] Figures compiled by Bureau of Animal Industry, U. S. Department of Agriculture.
[2] Per cent of total production.
[3] Estimated.
[4] Supplement to Bulletin 769, U. S. Department of Agriculture.

Digitized by Google

TABLE G–55.—*Production of larb and lard substitutes and of butter and butter substitutes in recent years*—Continued.

BUTTER AND BUTTER SUBSTITUTES.[1]

Year.	Butter—farm and factory.	Butter substitutes.	Total production.	Butter substitutes.[2]
	Pounds.	*Pounds.*	*Pounds.*	
1920	1,442,458,000	370,730,000	1,813,188,000	20
1919	1,558,900,000	371,317,000	1,930,217,000	19
1918	1,530,700,000	355,536,000	1,886,236,000	18
1917	1,568,890,000	290,902,000	1,856,792,000	15
1916	1,635,000,000	202,444,000	1,837,444,000	10
1914	1,706,000,000	143,900,000	1,849,900,000	7
1909	1,621,700,000	110,000,000	1,731,700,000	6

MARGARINE, 1916–1920.

	1916	1917	1918	1919	1920
UNCOLORED.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Combined animal and vegetable oil	177,264,474	254,440,884	255,196,572	214,750,089	165,178,136
Animal oil exclusively	15,479,588	7,562,741	3,306,671	3,391,206	4,444,924
Vegetable oil exclusively	1,941,932	21,803,482	88,861,472	132,906,154	186,569,182
COLORED.					
Combined animal and vegetable oil	7,198,937	6,958,211	7,056,442	9,302,681	9,426,812
Vegetable oil exclusively		725	112,494	9,792,694	4,969,828
Animal oil exclusively	559,130	136,889	1,002,864	1,165,363	141,167
Total	202,444,061	290,902,932	355,536,515	371,317,187	370,730,049

[1] Estimated. [2] Per cent of total production.

FISH.

The following table, G–56, gives the actual export and import of all fish and the relative export and import of all fish on 1909–1913 base:

TABLE G–56.—*The total actual and relative exports, imports, reexports, and net exports of all fish.*

[1909–1913=100.]

[Commerce Reports.]

Years and months.	Exports.[1]		Imports.[2]		Reexports (pounds).	Net imports.	
	Pounds.	Relative.	Pounds.	Relative.		Pounds.	Relative.
1909–10	72,977,962	96	123,004,001	88	1,819,964	48,206,075	79
1910–11	45,262,408	60	141,144,785	101	2,792,694	93,089,683	153
1911–12	61,214,381	81	130,890,896	94	4,568,633	65,107,872	107
1912–13	85,513,102	112	132,805,185	95	4,876,215	42,415,968	70
1913–14	114,973,036	151	172,103,096	123	2,573,839	54,556,221	90
1914–15	104,004,157	137	159,621,520	114	4,583,147	51,034,216	84
1915–16	187,011,182	246	152,474,573	109	4,552,560	.....	.....
1916–17	155,943,230	205	166,040,558	119	5,884,098	4,213,230	7
1917–18	155,520,857	205	179,231,211	128	6,952,630	16,757,724	28
1818–19	187,626,804	247	191,461,813	137	5,093,675	.....	.....
1919–20	167,509,337	220	219,437,750	157	8,170,342	43,758,071	72
1920–21	78,321,457	103	165,415,540	118	.....	87,094,083	144

[1] Includes fresh, dried, smoked, and cured, and canned salmon.
[2] Includes fresh halibut, salmon, and smelts, cured or preserved cod, haddock, herring, mackerel.

Digitized by Google

TABLE G-56.—*The total actual and relative exports, imports, reexports, and net exports of all fish*—Continued.

Years and months.	Exports.		Imports.		Reexports (pounds).	Net imports.	
	Pounds.	Relative.	Pounds.	Relative.		Pounds.	Relative.
1919.							
January	32,135,784	507	19,759,895	170	867,085	.....	.....
February	30,899,023	486	17,216,592	148	226,525	.....	.....
March	24,019,023	379	11,375,022	98	1,094,711	.....	.....
April	23,565,285	371	6,726,562	58	407,962	.....	.....
May	8,230,397	130	7,372,353	63	366,130	.....	.....
June	17,018,414	269	5,872,492	50	403,108	.....	.....
July	7,693,966	121	11,580,807	99	225,553	3,661,288	72
August	13,412,859	212	14,285,207	122	362,094	510,254	10
September	14,894,354	234	27,570,128	236	124,285	12,551,489	248
October	13,878,361	218	35,174,510	302	92,994	21,203,155	419
November	20,180,839	318	33,103,819	285	342,516	12,580,464	249
December	22,995,943	362	27,391,680	235	742,247	3,653,490	72
1920.							
January	11,512,129	182	22,555,733	193	1,266,999	9,776,605	193
February	17,387,559	273	12,190,575	105	814,459	.....	.....
March	17,448,108	275	11,104,915	95	1,040,559	.....	.....
April	11,723,293	185	6,344,645	54	821,829	.....	.....
May	9,895,544	156	8,283,798	71	940,658	.....	.....
June	6,529,882	103	9,851,934	84	1,391,029	1,931,023	38
July	4,925,577	78	9,684,548	83	631,450	4,127,531	82
August	3,547,692	56	16,331,570	140	586,830	12,197,048	241
September	6,508,649	103	15,723,817	135	147,982	9,067,186	179
October	12,064,665	191	16,536,922	142	526,901	3,945,356	78
November	8,753,617	138	23,431,624	202	307,134	14,370,873	284
December	8,709,323	138	19,451,096	167	616,341	10,125,432	200
1921.							
January	8,839,228	140	19,315,696	166	1,071,363	9,405,105	186
February	7,996,385	126	11,390,561	98	1,375,607	2,018,569	40
March	4,958,938	78	10,022,333	86	768,880	4,294,515	85
April	5,145,945	81	5,872,476	50	857,185	.....	.....
May	3,109,584	49	7,576,584	65	750,199	3,716,801	73
June	3,919,218	62	8,721,049	75	.....	4,801,831	95

In the five years ending June 30, 1914, we exported an average of 76,000,000 pounds of fish and imported an average of 140,000,000 pounds per year. We have imported more fish in each year since 1914 than we did on the average before 1914. Our exports of fish during the war years have also been higher than the prewar average. Our exports of a little over 78,000,000 pounds in the year ending June 30, 1921, were above the five-year prewar average, though the quantity exported in 1921 had been exceeded in 1913 and 1914. Our exports of canned salmon trebled in the war period, though they fell in the year ending in June, 1921, to below the prewar average.

Table G–57, page 155, shows the exports of fresh fish and canned salmon from the United States by fiscal years 1909 to 1921, and by months beginning with January, 1919, to and including June, 1921.

Digitized by Google

TABLE G–57.—*Exports of fresh fish and canned salmon from the United States, in pounds, 1909–1921.*

[Commerce reports.]

BY YEARS.

Date.	Fresh fish.	Canned salmon.	Date.	Fresh fish.	Canned salmon.
1909–10	4,703,413	63,860,696	1915–16	8,139,309	152,943,962
1910–11	.....	38,600,799	1916–17	9,998,323	117,962,807
1911–12	5,034,771	43,423,756	1917–18	10,467,321	110,060,480
1912–13	5,517,248	55,290,966	1918–19	10,263,239	130,105,646
1913–14	6,534,460	87,750,920	1910–20	8,380,438	108,292,621
1914–15	7,159,598	83,446,116	1920–21	10,756,960	41,770,058

BY MONTHS.

Date.	Fresh fish.			Canned salmon.		
	1919	1920	1921	1919	1920	1921
January	1,439,541	843,429	1,593,731	23,092,990	7,097,703	3,649,615
February	1,058,346	1,463,430	1,048,979	26,124,213	9,607,097	4,236,307
March	1,816,516	726,944	1,109,682	17,124,849	9,317,862	1,199,464
April	884,643	339,575	642,740	19,688,882	4,380,315	2,459,985
May	474,850	492,347	620,459	4,554,309	4,683,340	997,945
June	453,883	479,896	479,146	8,462,942	2,538,817	1,984,513
July	355,744	340,574	.....	5,155,878	2,498,531	.....
August	189,321	225,524	.....	10,872,071	1,693,405	.....
September	305,176	729,768	.....	12,784,458	4,468,561	.....
October	652,859	629,151	.....	10,094,221	8,964,290	.....
November	830,221	1,306,583	.....	15,840,414	4,778,068	.....
December	1,701,496	2,030,623	.....	15,955,445	4,869,374	.....

The net exports of live stock and of cotton have not been maintained in recent months. The prices of live stock and cotton declined first among agricultural products and declined most rapidly. The net exports of grain on the whole, particularly of wheat and rye and flour, have been well maintained and prices of these grains have been consequently maintained at a level above those of live stock and cotton. Exchange rates have affected exports of agricultural products, as they have exports of other commodities. This has placed the export business on a very speculative basis. Stabilization of foreign exchange would do much to facilitate the exportation of farm products.

Digitized by Google

Chapter VIII.

PRODUCTION AND CONSUMPTION OF FARM PRODUCTS AND THEIR RELATION TO PRICES.

In order to arrive at wise policies touching a program for the future development of agriculture it is necessary to marshal the facts of production and consumption in such a way that the relation of the various factors which have influenced prices may be thoroughly considered and properly appraised. Summation of these factors on the basis of the increase or decrease of total production would lead to wholly erroneous conclusions. Production must be considered on the basis of the supply available per capita after adding imports and subtracting exports. In this chapter an attempt is made to arrive at conclusions on the basis of the factors just enumerated.

The following table, H–1, on page 157, shows the annual and per capita production, relative per capita production, exports, imports, and reexports, the total per capita and relative per capita consumption of wheat, price of winter wheat on December 1, relative farm price per bushel, and relative purchasing power of wheat by years, from 1890 to 1920, while Table H–2 on page 158 shows the per capita consumption arrived at on the basis applied in chart G–1, on page 94, plus the factor of carry over in each year.

It will be noted that the per capita consumption by the second method is substantially the same as per capita consumption under the first method, although the introduction of the carry over in the calculation has the effect of evening up slightly the differences which otherwise exist from year to year.

The total production of wheat reached its highest point in 1915 with a crop somewhat in excess of a billion bushels. (See Table H–1.) The crop of 1920 was about three-fourths of the 1915 crop and slightly above the average of 1909 and 1913. The production, while showing wide fluctuations from year to year has nevertheless about kept even with the population. Domestic consumption, however, while subject to somewhat similar fluctuations, has shown a general tendency to increase. It is notable, in this connection, that per capita consumption of wheat has shown a marked tendency to decrease in periods of industrial depression, such as existed in the period 1893 to 1896 and during the latter part of 1920. The decrease in per capita consumption in 1920 has been taken care of in a large measure by increase in exports. In general, the export of wheat may be divided into three periods, first, beginning with 1891 and concluding with 1902, during which the percentage of export of the domestic crop was in excess of 30 per cent; a second period, from 1903 to 1913, during which the exports ranged from 10 to 25 per cent, and a third period, from 1914 to 1920, during which the exports ranged from 20.8 to 45.4 per cent. However, the table seems to indicate that domestic consumption is probably the largest factor in determining the price. In general, with a number of exceptions, the price of wheat has decreased in years of low consumption and increased in periods of high consumption. The purchasing power of wheat has remained fairly constant during the entire period

Digitized by Google

TABLE H-1.—*Annual and per capita production, relative per capita production, exports, imports, and reexports, the total, per capita, and relative per capita consumption of wheat, price of winter wheat on December 1, relative farm price per bushel, and relative purchasing power of wheat, by years, 1890–1920.*

Year.	Production.[1]	Population of United States.	Per capita production.	Relative per capita production (1909–1913 =100).	Domestic exports (fiscal year beginning July 1).[2]	Imports (fiscal year beginning July 1).[2]	Reexports of wheat (fiscal year beginning July 1).[2]	Total amount available for consumption.	Per cent domestic crop exported.[1]	Per capita consumption.	Relative per capita consumption (1909–1913 =100).	Farm price per bushel, Dec. 1.[1]	Relative farm price per bushel (1909–1913 =100).	Relative purchasing power of wheat.[3]
	Bushels.		*Bushels.*											
1890	399,262,000	62,622,250	6.3	86	106,181,316	583,827	620,679	293,043,832	26.6	4.6	74	83.8	98	118
1891	611,781,000	63,959,482	9.6	131	225,665,811	2,462,365	1,838,829	386,737,724	36.9	6.0	97	83.9	98	117
1892	515,947,000	65,296,714	7.9	108	191,912,635	968,125	572,750	324,429,740	37.2	4.9	79	62.4	73	94
1893	396,132,000	66,633,946	5.9	81	164,283,129	1,182,865	216,420	232,815,316	41.5	3.4	55	53.8	63	80
1894	460,267,000	67,971,178	6.8	93	144,812,713	1,438,399	548,792	316,344,889	31.5	4.6	74	49.1	57	81
1895	467,103,000	69,308,410	6.7	92	126,443,968	2,116,203	2,363,355	340,411,880	27.1	4.9	79	50.9	60	84
1896	427,684,000	70,645,642	6.0	82	145,124,972	1,544,242	1,501,916	282,601,354	33.9	4.0	65	72.6	85	127
1897	530,149,009	71,982,874	7.3	100	217,306,005	2,058,938	1,880,867	313,021,066	41.0	4.3	69	80.8	94	138
1898	675,149,000	73,310,106	9.2	126	222,618,420	1,875,174	1,935,127	452,470,627	33.0	6.1	98	58.2	68	97
1899	658,534,000	74,647,338	8.8	121	186,096,762	320,195	297,359	472,460,074	34.0	5.1	82	58.4	68	89
1900	522,230,000	75,994,575	6.8	93	215,990,073	603,101	669,112	306,173,916	41.4	4.0	65	61.9	72	88
1901	748,460,000	77,612,569	9.6	132	234,772,516	120,502	45,464	513,768,522	31.4	6.6	106	62.4	73	90
1902	670,063,000	79,230,563	8.4	115	202,905,598	1,080,129	1,261,626	466,975,906	30.3	5.8	94	63.0	74	85
1903	637,822,000	80,848,557	7.8	107	120,727,613	217,682	168,761	512,143,308	18.9	6.3	102	69.5	81	93
1904	552,400,000	82,466,551	6.7	92	44,112,910	3,286,190	587,473	510,986,807	8.0	6.2	100	92.4	108	123
1905	692,979,000	84,084,545	8.2	112	97,609,007	261,908	32,972	595,598,929	14.1	7.0	113	74.8	87	100
1906	735,261,000	85,702,533	8.5	116	146,700,425	590,092	599,432	588,552,235	20.0	6.8	110	66.7	78	87
1907	634,087,000	87,320,533	7.2	99	163,043,669	519,786	309,877	471,253,240	25.7	5.4	87	87.4	102	106
1908	664,602,000	88,938,527	7.4	101	114,268,468	456,940	3,772	550,786,700	17.2	6.1	98	92.8	108	116
1909	683,379,000	90,556,521	7.5	103	87,364,318	815,616	136,659	596,693,639	12.8	6.6	106	98.6	115	116
1910	635,121,000	92,174,515	6.8	93	69,311,760	1,146,558	1,397	566,954,401	10.9	6.1	98	88.3	103	102
1911	621,338,000	93,527,941	6.6	90	79,689,404	3,413,627	1,291	545,060,932	12.8	5.8	94	87.4	102	105
1912	730,267,000	94,881,366	7.6	104	142,879,596	1,282,039	83,037	588,586,405	19.6	6.2	100	76.0	89	86
1913	763,380,000	96,234,791	7.9	108	145,590,349	2,383,536	752,584	619,420,603	19.1	6.4	103	79.9	93	91
1914	891,017,000	97,588,216	9.1	125	332,484,975	715,369	187,871	559,079,522	37.3	5.7	92	98.6	115	113
1915	1,025,801,000	98,941,641	10.3	141	243,117,026	7,187,650	621,240	789,250,384	23.7	7.9	127	91.9	107	104
1916	636,318,000	100,295,066	6.3	86	203,573,928	24,924,985	63,948	457,605,109	32.0	4.5	73	160.3	187	147
1917	636,655,000	101,648,491	6.2	85	132,578,633	31,215,213	1,411,517	533,880,063	20.8	5.2	84	200.8	235	131
1918	921,438,000	103,001,916	8.9	122	267,438,087	11,288,591	502,434	644,766,070	31.2	6.2	100	204.2	238	119
1919	934,265,000	104,355,341	8.9	122	219,864,549	5,495,516	148,666	719,792,301	23.5	6.9	111	215.1	251	116
1920	787,128,000	105,708,771	7.4	101	358,000,563	51,398,002	984,840	485,540,599	45.4	4.6	74	144.3	168	68

[1] Yearbook of Department of Agriculture, 1920, p. 550.
[2] Statistical Abstract, 1920, p. 551; compiled from Commerce Reports.
[3] Relative purchasing power obtained by dividing the relative farm price per bushel by the weighted index of all commodities of Bureau of Labor Statistics, on the 1913 base converted to the 5-year base, 1909–1913.

Digitized by Google

TABLE No. H-2.—*The production and carry over of wheat, the exports and imports of wheat and wheat flour, and the per capita consumption of wheat, 1897–1920, by years.*

[Per capita consumption is arrived at on the basis applied in Chart G-1, plus the factor of carry over in each year.]

Year.	Production wheat.	Amount of crop carried over to following year.	Amount produced minus amount carried over to following year.	Carried over from previous year.	Amount of domestic crop available.	Population of United States.	Domestic exports (fiscal year beginning July 1).	Imports (fiscal year beginning July 1).	Reexports (fiscal year beginning July 1).	Total amount for consumption.[1]	Per capita consumption.
1897	530,149,000	17,839,000	512,310,000	23,347,000	535,657,000	71,982,874	217,306,005	2,058,938	1,880,867	318,529,066	4.42
1898	675,149,000	64,061,000	611,088,000	17,839,000	628,927,000	73,310,106	222,618,420	1,875,174	1,935,127	406,248,627	5.54
1899	658,534,000	50,900,000	607,634,000	64,061,000	671,695,000	74,647,338	186,096,762	320,195	297,359	485,621,074	6.55
1900	522,230,000	30,552,000	491,678,000	50,900,000	542,578,000	75,994,575	215,990,073	603,101	639,112	326,521,916	4.29
1901	748,460,000	52,437,000	696,023,000	30,552,000	726,575,000	77,612,569	234,772,516	120,502	45,464	491,877,522	6.34
1902	670,063,000	42,540,000	627,523,000	52,437,000	679,960,000	79,230,563	202,905,598	1,080,129	1,261,626	476,872,905	6.02
1903	637,822,000	36,630,000	601,192,000	42,540,000	643,732,000	80,848,557	120,727,613	217,682	168,761	523,053,308	6.47
1904	552,400,000	24,257,000	528,143,000	36,630,000	564,773,000	82,466,551	44,112,910	3,286,190	587,473	523,358,807	6.34
1905	692,979,000	46,053,000	646,926,000	24,257,000	671,183,000	84,084,545	97,609,007	261,908	32,972	573,802,929	6.82
1906	735,261,000	54,853,000	680,408,000	46,053,000	726,461,000	85,702,533	146,700,425	590,092	599,432	579,751,235	6.76
1907	634,087,000	33,797,000	600,290,000	54,853,000	655,143,000	87,320,533	163,043,669	519,786	309,877	492,309,240	5.64
1908	664,602,000	15,062,000	649,540,000	33,797,000	683,337,000	88,938,527	114,268,468	456,940	3,772	569,521,700	6.40
1909	683,379,000	35,680,000	647,699,000	15,062,000	662,761,000	90,556,521	87,364,318	815,616	136,659	576,075,639	6.36
1910	635,121,000	34,071,000	601,050,000	35,680,000	636,730,000	92,174,515	69,311,760	1,146,558	1,397	568,563,401	6.13
1911	621,338,000	23,876,000	597,462,000	34,071,000	631,533,000	93,527,941	79,689,404	3,413,627	1,291	555,255,932	5.94
1912	730,267,000	35,515,000	694,752,000	23,876,000	718,628,000	94,881,366	142,879,596	1,282,039	83,037	576,947,406	6.08
1913	763,380,000	32,236,000	731,144,000	35,515,000	766,659,000	96,234,791	145,590,349	2,383,536	752,584	622,699,603	6.47
1914	891,017,000	28,972,000	862,045,000	32,236,000	894,281,000	97,588,216	332,464,975	715,369	187,871	562,343,523	5.77
1915	1,025,801,000	74,731,000	951,070,000	28,972,000	980,042,000	98,941,641	243,117,026	7,187,650	621,240	743,491,384	7.62
1916	636,318,000	15,611,000	620,707,000	74,731,000	695,438,000	100,295,066	203,573,928	24,924,985	63,948	516,725,109	5.15
1917	636,655,000	8,063,000	628,592,000	15,611,000	644,203,000	101,648,491	132,578,633	31,215,213	1,411,517	541,428,063	5.32
1918	921,438,000	19,261,000	902,177,000	8,063,000	910,240,000	103,001,916	287,438,087	11,268,591	502,434	633,568,070	6.15
1919	934,265,000	47,260,000	892,727,000	19,261,000	906,266,000	104,355,341	219,864,549	5,540,516	148,666	691,793,301	6.66
1920	787,128,000	.....	.....	47,260,000	834,388,000	105,708,771	358,000,503	51,398,000	984,840	532,800,597	5.04

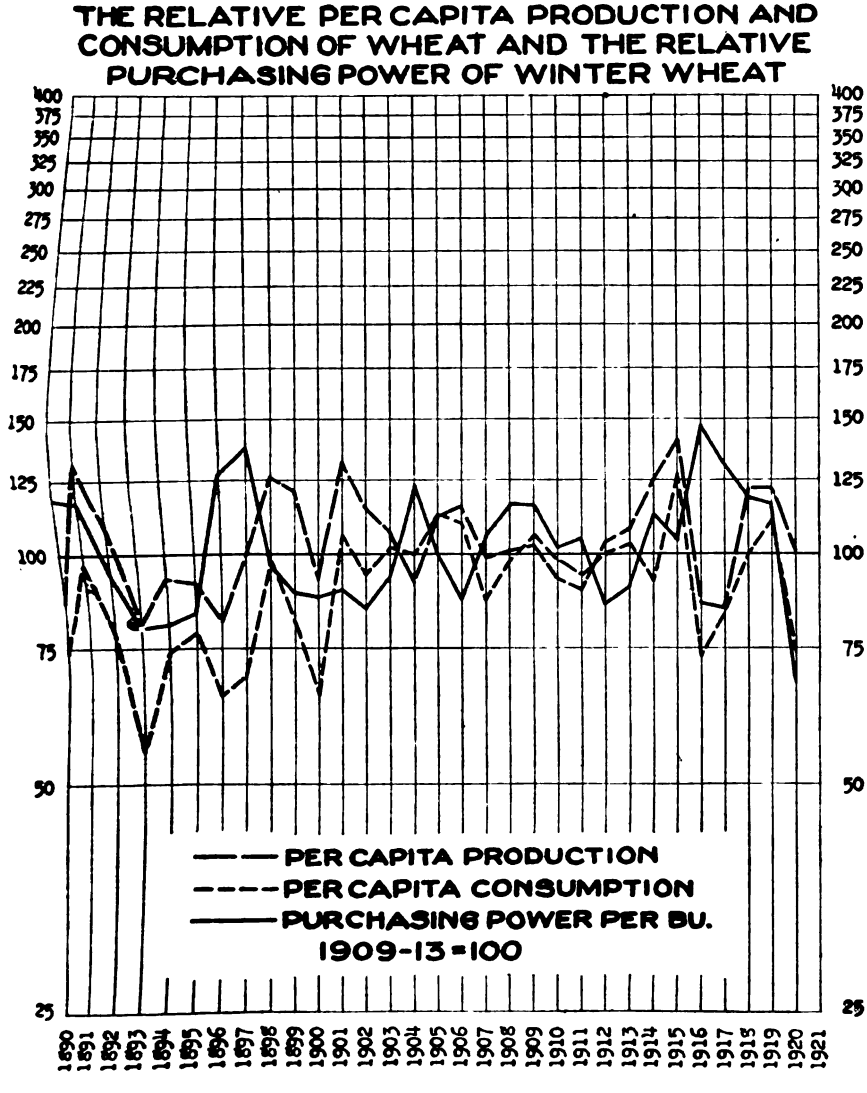
[1] The available supply after adjustment is made for carry over plus imports minus exports and reexports.

Digitized by Google

covered by the table and has been relatively high in comparison with other farm products, particularly during the period of the war in Europe. Perhaps the most notable fact shown by this table is the tremendous drop in the price of wheat during 1920, notwithstanding an increase in exports. It seems probable that this drop can be attributed almost wholly to the falling off of domestic consumption, which in 1920 was only 4.6 bushels per capita (representing 74 per cent of the average consumption from 1909 to 1913), and the beginning and continuance of industrial depression.

The following chart shows graphically the relative per capita production and consumption of wheat and the relative purchasing power of winter wheat.

CHART H-1.



Digitized by Google

TABLE H–3.—*Annual and per capita production; the exports, imports, reexports, and the total and per capita consumption of corn and price per bushel on Dec. 1, by years, 1890–1920.*

Year.	Production corn.[1]	Population of United States.	Per capita production.	Relative per capita production (1909–1913 =100).	Domestic exports (fiscal year).	Per cent of crop exported.[1]	Net imports.[2]	Total available for consumption, domestic and foreign.[2]	Available for consumption per capita.	Relative per capita consumption (1909–1913 =100).	Average farm price per bushel Dec. 1.[1]	Relative farm price per bushel (1909–1913 =100).	Relative purchasing power.[3]
	Bushels.		*Bushels.*						*Bushels.*				
1890	1,489,970,000	62,622,250	23.7	82	32,041,529	2.2	2,399	1,457,930,870	23.2	80	50.6	89	107
1891	2,060,154,000	63,959,482	32.2	111	76,602,285	3.7	5,785	1,983,557,500	31.0	107	40.6	71	85
1892	1,628,464,000	65,296,714	24.9	86	47,121,894	2.9	2,084	1,581,344,190	24.2	83	39.4	69	88
1893	1,619,496,131	66,633,946	24.3	84	66,489,529	4.1	2,478	1,553,009,080	23.3	80	36.5	64	81
1894	1,212,770,052	67,971,178	17.8	62	28,585,405	2.4	17,024	1,184,201,671	17.4	60	45.7	80	114
1895	2,151,138,580	69,308,410	31.3	108	101,100,375	4.7	4,677	2,050,042,882	29.5	133	25.3	44	62
1896	2,283,875,165	70,645,642	32.3	112	178,817,417	7.8	6,593	2,105,064,341	29.7	102	21.5	38	57
1897	1,902,967,933	71,982,874	26.4	91	212,055,543	11.1	3,493	1,690,915,883	23.4	81	26.3	46	68
1898	1,924,184,660	73,310,106	26.2	91	177,255,046	9.2	2,728	1,746,932,342	23.8	82	28.7	50	71
1899	2,078,143,933	74,647,338	27.8	96	213,123,412	10.3	2,548	1,865,023,069	24.9	86	30.3	53	70
1900	2,105,102,516	75,994,575	27.7	96	181,405,473	8.6	5,353	1,923,702,396	25.3	87	35.7	63	77
1901	1,522,519,891	77,612,569	19.6	68	28,028,688	1.8	17,456	1,494,508,659	19.2	66	60.5	106	131
1902	2,523,648,312	79,230,563	31.8	110	76,638,261	3.0	40,775	2,447,049,826	30.8	106	40.3	71	82
1903	2,244,176,925	80,848,557	27.7	96	58,222,061	2.6	11,898	2,185,966,762	27.0	93	42.5	74	85
1904	2,467,480,934	82,466,551	29.9	98	90,293,483	3.7	15,676	2,377,203,127	28.8	99	44.1	77	87
1905	2,707,993,540	84,084,545	32.2	111	110,893,333	4.4	10,429	2,588,100,136	30.7	106	41.2	72	83
1906	2,927,416,091	85,702,533	34.1	118	86,368,228	3.0	10,184	2,841,058,047	33.1	114	39.9	70	78
1907	2,592,320,000	87,320,533	29.6	102	55,063,860	2.1	19,370	2,537,275,510	29.0	100	51.6	90	94
1908	2,668,651,000	88,938,527	30.0	104	37,665,040	1.4	228,275	2,631,214,235	29.5	102	60.6	106	114
1909	2,552,190,000	90,556,521	28.1	97	38,128,498	1.5	118,215	2,734,365,622	30.1	104	57.9	101	102
1910	2,886,260,000	92,174,515	31.3	108	65,614,522	2.3	52,569	2,820,698,047	30.6	106	48.0	84	83
1911	2,531,488,000	93,527,941	27.0	93	41,797,291	1.7	53,488	2,490,744,197	26.5	91	61.8	108	111
1912	3,124,746,000	94,881,366	32.9	114	50,780,143	1.6	865,254	3,074,831,111	32.4	112	48.7	85	83
1913	2,446,988,000	96,234,791	25.4	88	10,725,819	.4	12,290,498	2,448,552,679	25.4	88	69.1	121	119
1914	2,672,904,000	97,588,216	27.3	94	50,668,303	1.9	9,894,498	2,632,030,195	26.9	93	64.4	113	111
1915	2,994,798,000	98,941,641	30.2	104	39,896,928	1.3	5,212,691	2,960,108,763	29.9	103	57.5	101	98
1916	2,566,927,000	100,295,066	25.5	88	66,753,294	2.6	2,270,079	2,502,443,785	24.9	86	88.9	156	123
1917	3,065,233,000	101,648,491	30.1	104	49,073,263	1.6	3,197,607	3,019,357,344	29.7	102	127.9	224	124
1918	2,502,665,000	103,001,916	24.2	84	23,018,822	.9	3,346,463	2,482,992,641	24.1	83	136.5	238	119
1919	2,858,509,000	104,355,341	27.3	94	16,707,447	.6	10,283,730	2,852,063,984	27.3	94	134.7	236	109
1920	3,232,367,000	105,708,771	30.5	106	66,911,093	2.0	4,742,264	3,170,198,171	29.9	103	67.7	119	48

[1] Exports and imports of corn and corn meal, 1890–1910, from Statistical Abstract for 1910, p. 535; 1911–1920, from Statistical Abstract 1920, p. 551.
[2] Statistics of grain crops, Department of Agriculture, Bulletin No. 861.
[3] Relative purchasing power obtained by dividing the relative farm price per bushel by the weighted index of all commodities of Bureau of Labor Statistics on the 1913 base converted to the five-year base 1909–1913.

Digitized by Google

The production of corn, while varying widely from year to year, has shown a constant increase during the period from 1890 to 1920 and has just about kept pace with increasing population. Careful examination of Table H–3, on page 160, seems to indicate that exports and imports of corn have not been influential factors in fixing the price, although exports have at times been considerable. In general, a short crop of corn is usually produced at an increase in price and a large crop at a decrease. It will be noticed two succeeding large crops, 1895 and 1896, resulted in a drop of nearly 50 per cent in the price compared with 1894. A short crop in 1901 resulted in an increase from 35.7 cents per bushel in 1900 to 60.5 cents per bushel in 1901, while a large crop in the succeeding year resulted in a drop from 60.5 cents to 40.3 cents per bushel. Again, in 1906 relatively large crops depressed the price and a smaller crop in 1907 increased it. In 1910 a substantial increase in production resulted in a decrease in price from 57.9 to 48 per bushel, while in the succeeding year a smaller production resulted in an increase from 48 to 61.8 per bushel, while a large crop in 1912 resulted in a drop in the price from 61.8 to 48.7 per bushel. A decline in the crop in 1913 as compared with 1912 resulted in an increase in the price from 48.7 cents to 69.1 cents per bushel.

The purchasing power of corn on the whole has been relatively less than that of wheat. In 1920 exports of wheat served to maintain the price relatively somewhat above that of corn, of which we had a large crop in 1920, which an increase in exports did not diminish sufficiently to prevent a tremendous drop in the domestic price.

Table H–4, on page 162, shows the effect of carry over in evening up the per capita consumption from year to year.

This carry over apparently has a stabilizing effect on the price of corn, although the carry over is apparently not sufficient to eliminate great fluctuations in price. Thus the per capita production of 31.8 bushels in 1902, which was very large, was reduced 1 bushel per capita by exports and another bushel by carry over—i. e., a production of 31.8 bushels per capita was reduced by exports in carry over to domestic consumption of 29.5 bushels per capita. Corn is marketed in the form of live stock in the main, hence the price of corn is an important factor to the hog and steer producer. For the country as a whole in no year is more than 25 per cent of the corn shipped out of the country in which it is grown and not to exceed 10 per cent of the crop in any year reaches the 10 primary markets.

Chart H–2, on page 163, shows graphically the relative per capita production and the relative purchasing power of corn. This chart in general indicates that the purchasing power of corn has risen when the per capita production was low and has fallen when per capita production was high.

Table H–6, on page 164, contains the same data for cotton as was given in Tables H–1, page 157, for wheat and H–3, page 160, for corn.

70678—H. Rept. 408, pt 1, 67–1——11

Digitized by Google

TABLE H-4.—*The production and carry-over of corn, the exports and imports of corn and corn meal, and the per capita consumption of corn, by years, 1897–1920.*

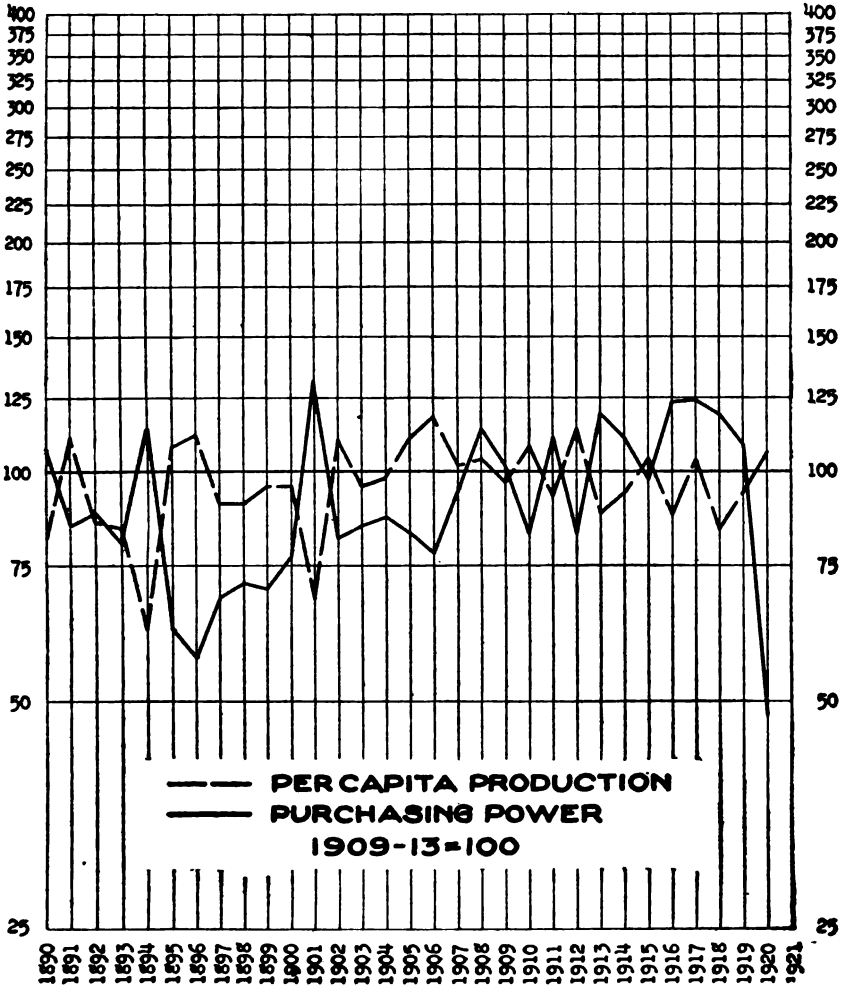
[In thousands of bushels.]

	Production.	Amount of crop carried over to following year.	Amount available out of this year's domestic crop.	Carried over from previous year.	Amount available for consumption.	Population of United States.	Domestic exports corn and corn meal (fiscal year beginning July 1).	Net imports corn and corn meal (fiscal year beginning July 1).	Actual per capita consumption.	Total amount for consumption.
									Bushels.	
1897	1,902,968	137,894	1,765,074	290,934	2,056,008	71,982,874	212,055,543	3,493	25.6	1,843,956
1898	1,924,185	113,644	1,810,541	137,890	1,948,431	73,310,106	177,255,046	2,728	24.1	1,771,179
1899	2,078,144	92,328	1,985,816	113,644	2,099,460	74,647,338	213,123,412	2,548	25.2	1,886,339
1900	2,105,103	95,825	2,009,278	92,328	2,101,606	75,994,575	191,405,473	5,353	25.2	1,920,206
1901	1,522,520	29,267	1,493,253	95,825	1,589,078	77,612,569	28,028,688	17,456	20.1	1,561,067
1902	2,523,648	131,210	2,392,438	27,267	2,419,705	79,230,563	76,638,261	40,775	29.5	2,343,108
1903	2,244,177	80,246	2,163,931	131,210	2,295,141	80,848,557	58,222,061	11,898	27.6	2,236,931
1904	2,467,481	82,285	2,385,196	80,246	2,465,442	82,466,551	90,293,483	15,676	28.8	2,375,164
1905	2,707,994	119,633	2,588,361	82,285	2,670,646	84,084,545	119,893,833	10,429	30.3	2,550,763
1906	2,927,416	130,995	2,796,421	119,633	2,916,054	85,702,533	86,368,228	10,184	33.0	2,829,606
1907	2,592,320	71,124	2,521,196	130,995	2,652,191	87,320,533	55,063,860	19,370	29.7	2,597,147
1908	2,668,651	79,779	2,588,872	71,124	2,659,996	88,938,527	37,645,040	228,275	29.4	2,622,559
1909	2,552,190	115,696	2,436,494	79,779	2,516,273	90,556,521	38,128,498	118,211	27.3	2,478,263
1910	2,886,260	123,824	2,762,436	115,696	2,878,132	92,174,515	65,611,522	52,569	30.5	2,812,570
1911	2,531,488	64,764	2,466,724	123,824	2,590,548	93,527,941	41,797,291	53,488	27.2	2,548,804
1912	3,124,746	137,972	2,986,774	64,764	3,051,538	94,881,366	50,780,143	965,254	31.6	3,001,623
1913	2,446,988	80,046	2,366,942	137,972	2,504,914	96,234,791	10,725,819	12,290,498	26.0	2,506,479
1914	2,672,804	96,009	2,576,795	80,046	2,656,841	97,588,215	50,068,303	9,894,498	26.8	2,616,067
1915	2,994,793	87,908	2,906,885	96,009	3,002,894	98,941,641	39,896,928	5,212,691	29.9	2,968,210
1916	2,566,927	34,448	2,532,479	87,908	2,620,387	100,295,066	66,753,294	2,270,079	25.4	2,555,904
1917	3,065,233	114,678	2,950,555	34,448	2,985,003	101,648,491	49,073,263	3,197,607	28.9	2,939,127
1918	2,502,665	69,335	2,432,830	114,678	2,547,508	103,001,916	23,018,822	3,346,163	24.5	2,527,836
1919	2,858,509	139,906	2,718,603	69,835	2,788,438	104,355,341	16,707,447	10,229,249	26.6	2,781,960
1920	3,232,367	.....	.....	139,906	3,372,273	105,708,771	66,911,093	4,742,264	31.3	3,310,104

Digitized by Google

CHART H-2.

THE RELATIVE PER CAPITA PRODUCTION AND THE RELATIVE PURCHASING POWER OF CORN



Digitized by Google

COTTON.

TABLE H–5.—*The total and per capita production of cotton, the total exports and imports, the total and per capita consumption, and the price of cotton on Dec. 1, by years, 1890–1920.*

Year	Production of cotton in bales.[1]	Population of United States.	Bales per 1,000 population.	Relative number of bales per 1,000 population (1909–1913=100).	Domestic exports (fiscal year beginning July 1).[1]	Imports (fiscal year beginning July 1).[1]	Total amount for consumption.[2]	Per cent of crop exported.	Consumption per 1,000 population.	Relative consumption per 1,000 (1909–1913=100).	Farm price per pound Dec. 1.[1]	Relative farm price Dec. 1 (1909–1913=100).	Relative purchasing power.[3]
					Bales.[4]	*Bales.*[4]	*Bales.*[4]		*Bales.*[4]	*Bales.*[4]	*Cents.*		
1890	8,674,000	62,622,250	138	100	5,814,718	41,818	2,604,491	66	41.6	73	8.6	71	86
1891	9,018,000	63,959,482	140.9	102	5,870,440	57,328	2,846,753	65	44.5	78	7.2	59	70
1892	6,664,000	65,296,714	101	73	4,424,230	87,736	2,415,875	66	37.0	65	8.3	68	87
1893	7,493,000	66,633,946	112	81	5,366,565	55,412	2,300,276	71	34.5	61	7.0	57	72
1894	9,476,000	67,971,178	139	101	7,034,866	96,664	2,983,665	74	43.9	77	4.6	38	54
1895	7,161,000	69,308,410	102	74	4,670,453	110,701	2,499,731	65	36.1	63	7.6	62	87
1896	8,533,000	70,645,642	120.8	87	6,207,510	103,798	2,841,394	72	40.2	71	6.7	55	82
1897	10,898,000	71,982,874	151	109	7,725,572	105,321	3,472,398	70	43.2	85	6.7	55	81
1898	11,189,000	73,310,106	152	110	7,575,438	100,316	3,672,097	68	50.1	88	5.7	47	67
1899	9,345,000	74,647,338	125	91	6,252,451	134,797	3,687,253	66	49.4	87	7.0	57	75
1900	10,123,000	75,994,575	131	95	6,718,125	93,263	3,603,516	66	47.4	83	9.2	75	91
1901	9,510,000	77,612,569	122	88	7,059,949	197,431	4,080,287	74	52.6	92	7.0	57	70
1902	10,631,000	79,230,563	134	97	7,138,284	149,749	4,187,076	67	52.8	93	7.6	62	71
1903	9,851,000	80,848,557	121.8	88	6,179,712	97,681	3,980,567	62	49.2	86	10.5	86	99
1904	13,438,000	82,466,551	162	117	8,678,644	121,017	4,523,208	64	54.8	96	9.0	74	84
1905	10,575,000	84,084,545	126.9	92	7,268,090	141,927	4,877,465	68	58.0	102	10.8	89	102
1906	13,274,000	85,702,533	154	112	9,036,434	209,584	4,974,199	68	58.0	102	9.6	79	88
1907	11,107,000	87,320,533	127	92	7,633,997	142,146	4,493,028	68	51.5	90	10.4	85	89
1908	13,242,000	88,938,527	148	107	8,895,970	173,036	5,198,963	67	58.5	103	8.7	71	76
1909	10,005,000	90,556,521	110	80	6,413,416	172,075	4,759,364	64	52.5	92	13.9	114	115
1910	11,609,000	92,174,515	125	91	8,067,882	227,537	4,713,126	69	51.1	90	14.1	116	115
1911	15,693,000	93,527,941	167	121	11,070,251	219,560	5,400,005	70	57.7	101	8.8	72	74
1912	13,703,000	94,881,366	144	104	9,124,591	243,704	5,867,431	66	61.8	108	11.9	98	95
1913	14,156,000	96,234,791	147	107	9,521,881	246,694	5,942,808	67	61.8	108	12.2	100	98
1914	16,135,000	97,588,216	165	120	8,807,157	370,409	6,087,338	54	62.4	109	6.8	56	55
1915	11,192,000	98,941,641	113	82	6,168,140	465,602	7,326,598	55	74.0	130	11.3	93	90
1916	11,450,000	100,295,066	114	83	6,176,162	294,123	7,721,354	53	77.0	135	19.6	161	127
1917	11,302,000	101,648,491	111	80	4,641,023	206,651	7,355,191	41	74.3	130	27.7	227	126
1918	12,041,000	103,001,916	117	85	5,525,894	207,184	6,288,922	45	61.1	107	27.6	226	113
1919	11,421,000	104,353,341	109	79	7,087,487	690,628	6,907,817	62	65.2	114	35.6	292	135
1920	12,987,000	105,708,771	123	89	5,409,102	251,878	7,828,776	42	74.1	130	14.0	115	46

[1] Yearbook of Department of Agriculture, 1920, p. 637.
[2] Statistical Abstract, 1920, p. 554. Figures do not relate to calendar or fiscal years, but to the 12 months during which the crop of the specified year was chiefly marketed.
[3] Relative purchasing power obtained by dividing the relative farm price per bale by the weighted index of all commodities of Bureau of Labor Statistics on the 1913 base, converted to the five-year base, 1909–1913.
[4] Bales of 500 pounds gross weight.

Digitized by Google

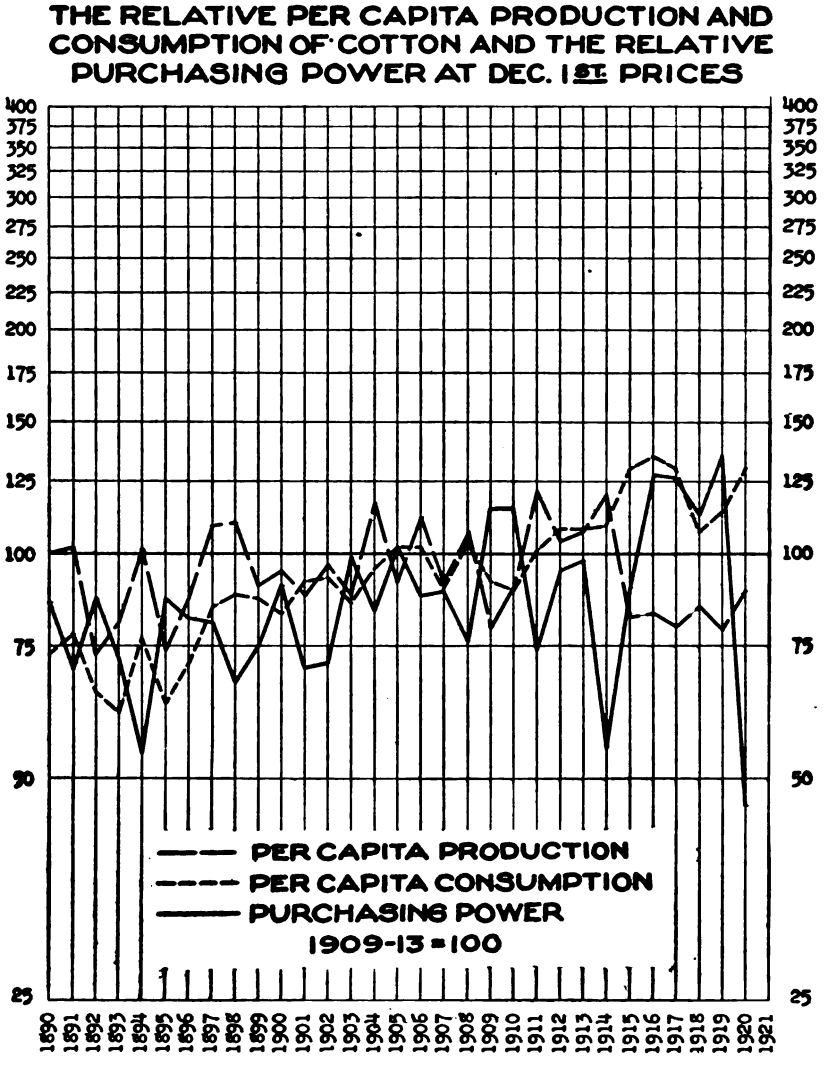
The total production of cotton in the United States tended to increase during the period from 1890 to 1914 and since then tended to decrease. The percentage of the crop exported has remained fairly constant from 1890 to 1912, since which time it has declined. The decline in exports has been compensated for by a relative increase in domestic consumption. The price of cotton, as indicated by this chart, has shown a fairly constant tendency to increase in the years of low production and decrease in the years of high production. The price has also borne a very direct relation to the relative consumption per 1,000 inhabitants. A large crop in 1894 resulted in the drop in price from 7 cents per pound in 1893 to 4.6 cents in 1894. A small crop in 1895 resulted in an increase to 7.6 cents per pound. A small crop in 1899 resulted in an increase in price, as did a small crop in the succeeding year. A large crop in 1904 brought a reduction in price, and a small crop in the following year produced an increase in the price, which was again reduced by a large crop in 1906 and again increased by a small crop in 1907 and again decreased by a large crop in 1908 and increased by a small crop in 1909, further increased by a small crop in 1910, decreased by a large crop in 1911, and increased by a drop in production in 1912. The drop in exports of cotton in 1920 as compared with 1919 was very marked and the drop in price also very considerable indeed. This drop in price in its turn resulted in very low purchasing power of cotton.

In general it may be said, as expressed in purchasing power, cotton is relatively less profitable than either corn or wheat.

Digitized by Google

The following chart, H–3, shows graphically the per capita production and consumption of cotton and the relative purchasing power of cotton as of December 1, from 1890 to 1920.

CHART H–3.

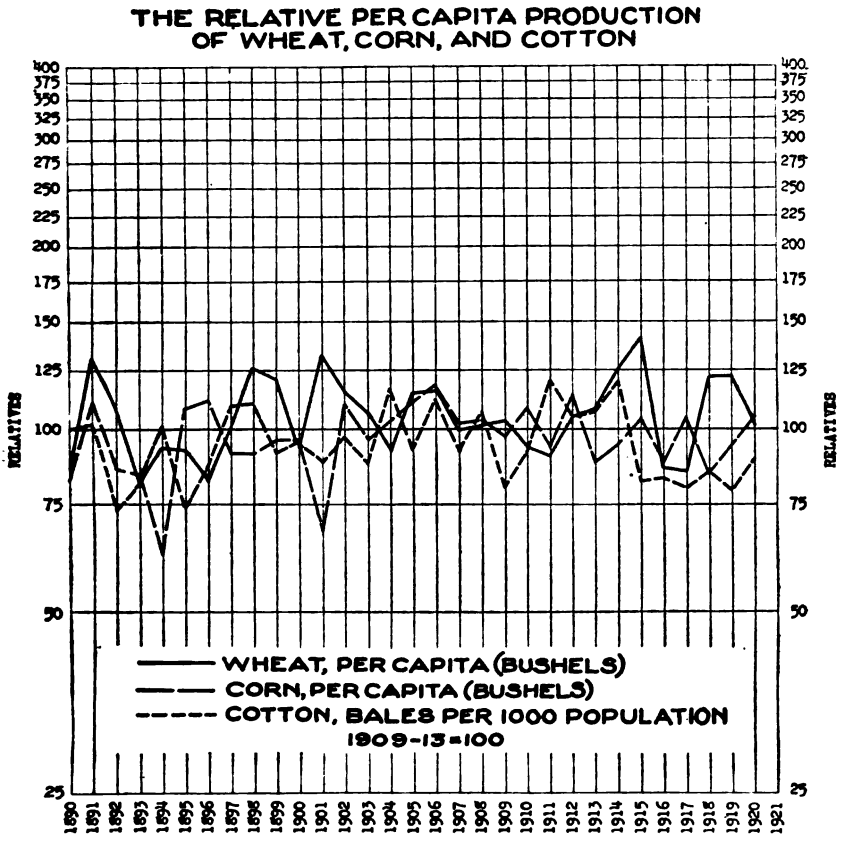


It must be borne in mind in considering the relation of per capita consumption, as indicated by these charts and the preceding ones, that per capita consumption does not indicate actual demand, but rather the supply per capita after allowing for exports, imports, and carry over.

Digitized by Google

The more rapid trend downward in the per capita production of cotton in this country as compared with the per capita production of wheat and corn in recent years is shown in chart H–4, which follows.

CHART H–4.



Digitized by Google

PRICE OF LIVE STOCK—DAIRY COWS.

The number of dairy cows on farms in the United States has been slowly but steadily increasing during the past 30 years, as indicated by the following table:

TABLE H–6.—*The number of milk cows on farms, total and per capita per thousand population; the relative number per thousand population; the farm price and relative farm price on Jan. 1 and the relative purchasing power, by years, 1890–1920.*

Years.	Number of milk cows on farms.[1]	Population of United States.	Number of milk cows per 1,000 population.	Relative number of milk cows per 1,000 population (1909–1913=100).	Farm price per head Jan. 1 (1909–1913=100).[1]	Relative farm price per head (1909–1913=100).	Relative purchasing power.[2]
1890	16,511,950	62,622,250	264	118	22.14	58	70
1891	16,020,000	63,959,482	250	112	21.62	56	67
1892	16,416,000	65,296,714	251	113	21.40	56	72
1893	16,424,000	66,633,946	246	110	21.75	57	72
1894	16,487,000	67,971,178	243	109	21.77	57	81
1895	16,505,000	69,308,410	238	107	21.97	57	80
1896	16,138,000	70,645,642	228	102	22.55	59	88
1897	15,942,000	71,982,874	221	100	23.16	60	88
1898	15,841,000	73,310,106	216	97	27.45	72	103
1899	15,990,000	74,647,338	214	96	29.66	77	101
1900	17,135,633	75,994,575	225	101	31.60	82	100
1901	16,834,000	77,612,589	216	97	30.00	78	95
1902	16,697,000	79,230,553	211	95	29.23	76	87
1903	17,105,000	80,848,557	212	95	30.21	79	91
1904	17,420,000	82,466,551	211	95	29.21	76	86
1905	17,572,000	84,084,545	209	94	27.44	71	82
1906	19,794,000	85,702,533	231	104	29.44	77	86
1907	20,968,000	87,320,533	240	108	31.00	81	84
1908	21,194,000	88,938,527	238	107	30.67	80	86
1909	21,720,000	90,556,521	239	107	32.36	84	85
1910	20,625,432	92,174,515	224	100	35.29	92	91
1911	20,823,000	93,527,941	223	100	39.97	104	107
1912	20,699,000	94,881,366	218	98	39.39	102	99
1913	20,497,000	96,234,791	213	96	45.02	117	115
1914	20,737,000	97,588,216	212	95	53.94	140	137
1915	21,262,000	98,941,641	214	96	55.33	144	140
1916	22,108,000	100,295,066	220	99	53.92	140	110
1917	22,894,000	101,648,491	225	101	59.63	155	86
1918	23,310,000	103,001,916	226	101	70.54	184	92
1919	23,475,000	104,355,341	224	101	78.20	204	94
1920	23,619,000	105,708,771	223	100	85.11	222	90
1921	23,321,000	106,000,000	220	99	63.97	166	.....

[1] Yearbook of the Department of Agriculture, 1920, p. 729.
[2] Relative purchasing power obtained by dividing the relative farm price per head by the weighted index of all commodities of Bureau of Labor Statistics, on the 1913 base converted to the 5-year base 1909–1913.

This increase has about kept pace with the population, although the number of milk cows per thousand population is relatively less in the last decade than it was in the decade ending in 1900. There were 221 dairy cows per 1,000 people on the average in the 10 years ending in 1920, as compared with 223 in the decade ending in 1910 and 232 in the decade ending in 1900. The value of dairy cows per head has increased quite steadily since 1890 and without much reference to the relative increase or decrease in the number of head per thousand population, although a decline in the number per 1,000 of population since 1906 has apparently resulted in an increased value per head.

The output of milk per cow has likewise increased, and as the grade of dairy cow has improved, the grade of milk has likewise improved;

Digitized by Google

hence the total production of milk and butter has increased more rapidly than the number of dairy cows. The total production of milk in the United States as reported to the Census Bureau increased 18.5 per cent from 1909 to 1919, as compared with an increase of 14.5 per cent in population from 1910 to 1920. The estimate of milk production made by the Bureau of Census from 1909 to 1919 shows an increase of but 4.5 per cent of milk production in that period. The Census Bureau's estimates of milk production, however, were based on cows "kept for milk," including many that were milked only a short time in the year. The bureau believes that the estimates of 1909 were somewhat too large, and therefore suggests that percentage comparisons should be based preferably on milk production as reported. The increase of milk production as reported was 18.5 per cent. Milk for the larger populations in the cities compared with 20 years ago has been secured chiefly through decreasing the amount of milk made into butter and cheese, as shown in the following table:

TABLE H–7.—*Dairy products of the farms in the United States, 1919, 1909, and 1899.*

[Bureau of the Census.]

Item.	1919	1909	1899	Per cent increase or decrease 1919 over 1909.	Per cent increase or decrease 1919 over 1899.
Milk produced, including estimates.....gallons..	7,805,238,069	7,466,406,384	7,265,804,304	+ 4.5	+ 7.0
Milk produced, as reported .....gallons..	6,893,748,235	5,813,699,474	.....	+18.6	.....
Milk sold.....do....	2,529,380,638	1,937,255,864	2,134,830,207	+30.6	+ 18.4
Butter made.....pounds..	707,666,492	994,650,610	1,071,626,056	−28.9	− 33.9
Butter sold.....do....	207,859,564	415,080,489	518,042,767	−49.9	− 59.8
Cheese made.....do....	6,371,396	9,405,864	16,372,318	−32.3	− 61.08
Cream sold.....gallons..	82,247,580	54,933,563	20,768,662	+49.7	+296.0
Butter fat sold.....pounds..	532,244,072	305,622,587	82,311,511	+74.1	+546.6

The States reporting the largest total sales of milk in 1919 were New York, with 573,161,952 gallons; Wisconsin with 473,816,832 gallons; and Pennsylvania with 250,444,940 gallons. (Shown in Table H–8, on page 170.) These three States together reported one-half (51.3 per cent) of the milk sold from farms in 1919. Wisconsin has increased her production 69.5 per cent, New York 13.2 per cent, and Pennsylvania 13 per cent. In the decade 1909–1919 the largest increase in percentage in milk production was in the Mountain and East North Central States. In the period referred to, the quantity of cheese made on farms decreased 32.3 per cent and the quantity of butter 28.9 per cent. The number of gallons of milk sold increased 30.6 per cent. Cream sold by farmers increased 49.7 per cent in the same period, while the sales of butter fats from farms increased 74.1 per cent. These figures indicate that the change from farm to factory production has brought sharp declines in the butter and cheese made on farms and a marked increase in milk, cream, and butter fats sold from the farm.

The relative number of dairy cows on farms per 1,000 population and their relative purchasing power is shown graphically in Chart H–5, on page 172.

Digitized by Google

TABLE H–8.—*Dairy products of farms in the United States, by geographic divisions and States: 1919 and 1909.*

Division and State.	Milk produced.		Milk sold (gallons).		Butter made (pounds).		Butter sold (pounds).		Cream sold (gallons).		Butterfat sold (pounds).	
	Quantity, including estimates, 1919 [1] (gallons).	Per cent of increase, 1909–1919. [2]	1919	1909	1919	1909	1919	1909	1919	1909	1919	1909
United States	7,805,238,069	4.5	2,529,380,638	1,937,255,864	707,666,492	994,650,610	207,859,504	415,080,489	82,247,580	54,933,583	532,244,072	305,662,587
Geographic divisions:												
New England	385,638,607	− 2.0	208,464,058	175,209,759	22,093,227	40,732,783	14,670,830	29,528,001	2,487,936	4,469,060	17,571,096	14,599,436
Middle Atlantic	1,248,168,026	11.9	879,984,088	750,556,634	64,797,058	88,242,228	41,855,538	57,828,247	3,116,194	2,446,696	12,490,752	44,023,628
East North Central	2,246,679,781	28.4	948,491,089	661,302,433	108,093,861	230,966,876	42,377,384	135,159,149	27,654,771	15,272,040	187,178,213	85,099,734
West North Central	1,718,412,734	19.2	129,303,194	144,537,918	130,995,829	201,172,278	28,883,728	88,186,732	31,949,388	22,599,643	214,581,923	123,176,904
South Atlantic	517,728,377	7.4	81,264,102	45,378,866	121,072,533	123,270,552	32,495,022	33,888,871	1,417,055	1,027,441	3,305,410	505,904
East South Central	458,942,467	0.1	32,803,250	22,593,214	120,495,395	136,239,873	19,418,492	22,688,468	2,616,454	368,959	8,548,193	217,860
West South Central	459,391,493	− 4.7	36,808,346	21,070,626	101,443,114	128,188,799	16,421,394	24,321,179	3,243,867	1,064,000	12,431,547	4,465,810
Mountain	260,482,904	98.5	47,870,550	31,108,665	22,840,410	18,115,811	7,196,857	7,035,775	3,952,032	1,549,881	17,884,633	4,799,182
Pacific	509,793,680	55.0	164,391,961	85,497,749	15,835,065	27,721,410	4,540,319	15,844,067	5,809,883	6,135,863	58,192,305	28,774,135
New England:												
Maine	77,676,881	20.1	28,190,733	12,784,866	10,855,560	13,299,229	6,945,411	8,389,817	742,813	737,706	2,705,560	4,060,344
New Hampshire	42,556,285	4.1	23,043,256	21,132,268	3,240,368	5,065,188	2,272,752	3,510,593	264,635	380,944	758,782	566,229
Vermont	122,095,734	− 5.4	55,319,390	33,998,934	3,877,039	15,165,692	2,954,634	12,892,124	928,843	2,353,686	13,072,731	7,756,395
Massachusetts	76,316,309	−20.5	55,676,858	64,496,692	2,019,231	3,364,516	1,282,887	2,220,311	310,918	501,876	506,851	1,148,019
Rhode Island	12,099,111	3.9	9,313,548	8,796,847	174,902	339,607	81,150	177,322	30,022	42,421	15,524	5,347
Connecticut	54,894,287	8.1	36,920,273	34,000,152	1,926,127	3,498,551	1,133,996	2,337,834	210,705	452,427	511,648	1,063,096
Middle Atlantic:												
New York	756,045,942	13.2	573,161,952	524,279,723	24,727,662	23,461,702	15,455,725	12,650,113	1,815,983	1,207,174	6,298,760	36,249,617
New Jersey	70,490,729	− 5.3	56,377,196	56,856,550	1,600,789	3,622,411	674,267	2,003,029	51,114	79,485	61,579	249,557
Pennsylvania	421,631,355	13.0	250,444,940	169,420,361	38,468,607	61,158,115	25,725,546	43,195,105	1,249,097	1,160,037	6,130,413	7,524,454
East North Central:												
Ohio	396,317,787	13.1	139,063,960	99,430,948	30,264,265	63,569,132	14,116,447	39,252,326	7,658,715	2,191,997	29,828,000	7,563,527
Indiana	238,793,861	8.9	45,167,166	32,562,414	18,344,239	43,181,817	6,438,298	24,715,894	5,907,414	1,347,660	25,922,440	6,361,831
Illinois	370,486,981	4.1	159,578,765	158,031,333	25,063,897	46,609,992	8,734,470	24,442,251	5,620,433	2,104,352	17,052,544	4,637,745
Michigan	382,822,631	19.3	130,864,366	74,025,769	25,755,423	50,405,426	10,154,869	30,010,783	4,459,626	2,485,061	31,647,906	18,287,691
Wisconsin	858,258,521	69.5	473,816,832	297,251,969	8,666,037	27,200,509	2,933,300	16,737,895	4,002,583	7,142,970	82,727,323	48,248,940
West North Central:												
Minnesota	475,506,689	42.0	43,151,896	53,181,785	20,205,076	34,708,669	4,392,185	18,016,409	5,888,538	5,756,165	82,412,061	40,414,751
Iowa	361,426,362	2.5	31,355,659	55,241,511	25,422,675	38,679,568	6,463,846	17,917,387	6,784,753	8,062,449	45,411,147	42,917,696
Missouri	228,907,721	10.7	17,900,545	15,733,185	23,470,763	42,105,143	7,022,562	14,646,771	4,836,763	1,399,989	14,853,783	4,927,383
North Dakota	138,606,540	76.1	3,047,096	1,644,150	14,413,180	16,414,439	2,898,998	7,019,169	3,098,421	834,103	14,607,548	2,185,377
South Dakota	124,427,638	37.7	2,697,554	2,385,781	10,267,171	13,629,647	1,493,800	5,941,092	2,841,406	2,232,961	13,615,085	5,776,689
Nebraska	168,083,367	− 5.8	10,181,597	6,500,380	13,761,085	25,986,931	2,338,491	11,652,068	3,631,494	1,952,908	17,621,330	12,371,699
Kansas	221,464,417	14.6	20,968,847	9,851,126	17,455,879	29,647,881	4,273,846	12,993,836	4,868,013	2,361,068	26,060,969	14,583,909

Digitized by Google

South Atlantic:												
Delaware	11,356,313	19.8	6,876,251	4,425,909	894,883	1,563,161	675,359	1,024,945	34,252	25,809	76,232	18,149
Maryland	58,754,198	26.7	29,842,910	19,424,325	6,162,501	8,739,620	3,925,042	5,082,228	311,430	455,490	448,266	343,148
Dist. of Columbia	512,074	− 9.0	129,170	339,345	6,026	6,155	81	1,800	25	.....	50	.....
Virginia	110,942,113	5.5	17,009,435	8,577,893	25,476,621	26,651,244	8,007,298	7,983,430	556,583	302,217	1,163,064	97,558
West Virginia	73,690,103	− 5.7	6,778,970	4,060,741	17,715,107	18,969,699	7,155,413	7,077,664	292,106	104,696	581,519	8,421
North Carolina	96,747,638	0.7	7,060,063	2,380,029	25,551,506	26,059,585	5,819,193	5,670,590	100,933	21,329	729,419	9,224
South Carolina	52,954,637	15.5	2,870,607	919,745	13,846,353	12,329,567	1,956,001	1,752,209	18,155	11,282	98,606	10,023
Georgia	101,615,773	12.6	7,389,966	3,872,098	30,257,153	27,246,247	4,728,372	4,385,354	86,908	97,564	240,456	17,286
Florida	12,155,533	17.7	3,306,730	1,388,781	1,162,383	1,705,274	228,263	310,651	16,657	9,048	27,798	2,095
East South Central:												
Kentucky	146,561,464	4.7	12,469,133	10,415,482	34,080,415	38,130,687	5,917,916	8,421,827	1,581,285	159,016	4,238,223	154,427
Tennessee	130,285,644	− 1.7	9,831,349	6,814,209	37,166,063	39,827,906	8,468,929	9,009,307	490,112	145,976	1,862,519	32,345
Alabama	93,903,677	1.0	6,408,962	3,397,426	28,490,181	29,550,595	3,160,572	2,805,021	150,474	28,385	582,858	21,744
Mississippi	88,191,682	− 5.5	4,093,806	1,966,097	20,758,736	28,730,685	1,871,075	2,452,313	394,583	35,582	1,864,593	9,344
West South Central:												
Arkansas	87,623,651	− 8.3	4,332,116	3,952,322	25,571,098	29,907,337	3,182,328	3,694,311	234,791	53,302	897,812	74,607
Louisiana	32,972,720	−15.6	5,334,031	4,501,119	4,252,318	6,232,006	471,596	1,019,420	19,459	32,433	72,455	7,073
Oklahoma	135,820,769	14.0	7,781,754	3,626,217	22,214,546	27,056,242	3,820,173	7,465,824	2,338,859	526,193	8,357,831	3,137,112
Texas	202,974,353	−11.3	19,360,445	8,990,968	49,405,152	64,993,214	8,947,297	12,141,624	650,758	452,072	3,103,449	1,247,018
Mountain:												
Montana	51,251,095	166.5	5,101,542	3,584,689	5,961,336	2,820,574	2,062,541	1,234,263	926,842	274,979	2,909,284	652,097
Idaho	52,365,498	119.3	6,302,891	2,060,111	4,540,364	3,542,135	1,381,995	1,417,663	780,310	319,542	4,951,818	1,191,867
Wyoming	14,613,581	104.1	2,193,815	1,377,607	1,422,822	1,192,122	395,135	461,552	204,273	46,680	1,005,907	67,303
Colorado	79,492,631	114.1	16,086,983	10,037,067	5,775,602	5,856,132	1,739,147	2,914,143	1,381,758	440,257	5,804,055	1,087,681
New Mexico	12,737,649	63.1	1,626,479	1,036,922	1,404,138	1,477,617	332,002	410,634	198,098	9,679	682,973	11,248
Arizona	14,370,833	87.6	6,707,170	3,347,723	593,446	325,980	193,597	120,951	92,089	37,744	762,599	665,850
Utah	29,339,512	25.0	9,051,137	8,471,713	2,876,675	2,497,366	1,040,581	919,581	291,659	270,225	1,049,559	914,133
Nevada	6,312,105	24.2	800,533	1,192,833	266,027	403,885	51,859	156,588	77,003	150,775	718,438	209,003
Pacific:												
Washington	140,524,518	77.0	63,575,339	25,524,209	5,899,678	6,751,575	2,012,530	3,112,326	1,586,806	1,911,261	9,738,94	4,386,283
Oregon	92,844,946	41.9	22,878,290	14,640,108	4,177,628	5,667,964	1,145,803	2,446,158	1,106,341	827,541	10,835,785	5,211,133
California	276,424,216	49.8	77,938,332	45,333,432	5,757,759	15,301,871	1,381,986	10,285,583	3,116,736	3,397,061	37,618,426	19,176,719

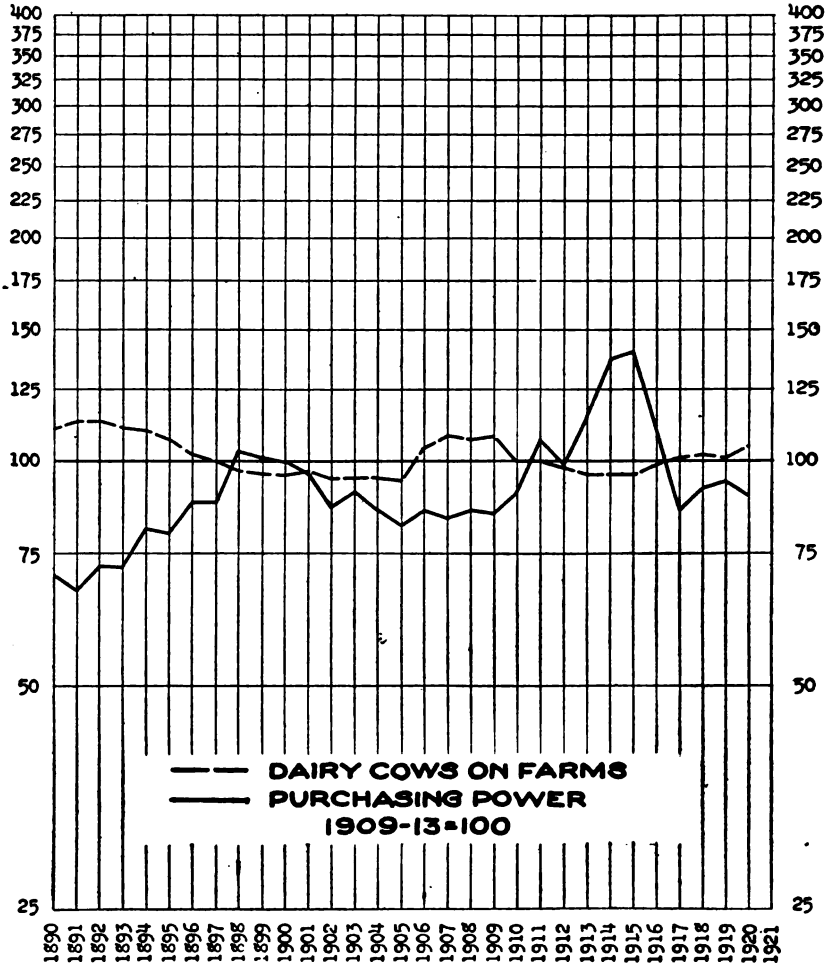
[1] Figures include estimates for farms which reported dairy cows on hand but failed to report any milk production.

[2] Percentages based on milk produced, as reported, rather than on estimated totals, by reason of the fact that the 1909 estimates appear to have been somewhat too large to provide a fair basis of comparison. A minus sign (−) denotes decrease.

Digitized by Google

CHART H-5.

THE RELATIVE NUMBER OF DAIRY COWS ON FARMS PER 1000 POPULATION AND THEIR RELATIVE PURCHASING POWER



CATTLE OTHER THAN DAIRY COWS.

There have been fewer cattle other than dairy cows on our farms in the past decade than there were in the preceding decade. The number of cattle on our farms per 1,000 population has decreased at a rapid rate. The number of cattle on farms per thousand population averaged 402 in the decade ending 1920, as compared with 543 in the decade ending 1910 and 502 in the decade ending with 1900, as indicated by Table H-9, on page 173.

A study of Table H-9 discloses the fact that the price of beef cattle has borne a rather consistent relation to the relative number per 1,000 of population. Seven years of large relative production of

Digitized by Google

TABLE H-9.—*The number of cattle other than milk cows (including oxen) on farms, total and per capita, the relative number per thousand population, the number imported and exported, the number available for consumption, the number available for consumption per thousand population, the relative number available for consumption per thousand population, the farm price per head on Jan. 1, the relative farm price on Jan. 1, and the relative purchasing power of cattle, by years, 1890-1920.*

Years.	Number of cattle on farms.[1]	Population of United States.	Number of cattle per 1,000 population.	Relative number per 1,000 population (1909-1913=100).[1]	Imports of live cattle (fiscal year beginning July 1).[1]	Exports of domestic cattle (fiscal year beginning July 1).[1]	Total number of cattle available for consumption.	Number available for consumption per 1,000 population.	Relative number available per 1,000 population (1909-1913=100).[1]	Farm price per head, Jan. 1.[1]	Relative farm price per head, Jan. 1 (1909-1913=100).	Relative purchasing power.[2]
1890	33,734,128	62,622,250	538	123	30,602	394,836	33,369,984	532	121	15.21	73	88
1891	36,876,000	63,959,482	576	132	12,392	374,679	36,513,713	570	130	14.76	71	85
1892	37,051,000	65,296,714	567	130	3,293	287,094	36,767,199	562	128	15.16	73	94
1893	35,054,000	66,633,946	526	121	1,592	359,278	34,696,314	520	118	15.24	73	92
1894	36,608,000	67,971,178	539	124	149,781	765,853	35,991,928	515	117	14.66	70	100
1895	34,364,000	69,308,410	496	114	217,826	372,461	34,209,365	493	112	14.06	68	96
1896	32,085,000	70,645,642	454	104	328,977	392,190	32,021,787	453	103	15.86	76	113
1897	30,508,000	71,982,874	423	97	291,589	439,255	30,360,334	421	96	16.65	80	118
1898	29,264,000	73,310,106	399	92	199,752	389,490	29,074,262	396	90	20.92	100	143
1899	27,994,000	74,647,338	374	86	181,006	397,286	27,777,720	372	85	22.79	109	143
1900	50,585,777	75,994,575	665	153	146,022	459,218	50,272,581	635	145	24.97	120	146
1901	45,500,000	77,612,569	586	134	96,027	392,884	45,203,143	582	133	19.93	95	117
1902	44,728,000	79,230,563	565	130	66,175	402,178	44,391,997	561	128	18.76	89	102
1903	44,659,000	80,848,557	552	127	16,056	593,409	44,081,547	545	124	18.45	88	101
1904	43,629,000	82,466,551	516	118	27,855	567,806	43,089,049	522	119	16.32	78	89
1905	43,669,000	84,084,545	519	119	29,019	584,239	43,113,780	512	117	15.15	73	84
1906	47,068,000	85,702,533	549	126	32,402	423,051	46,677,351	544	124	15.85	76	84
1907	51,566,000	87,320,533	590	135	92,356	349,210	51,309,146	587	134	17.10	82	85
1908	50,073,000	88,938,527	563	129	139,184	207,542	50,004,642	562	128	16.89	81	87
1909	49,379,000	90,556,521	545	125	195,938	139,430	49,435,508	545	124	17.49	83	84
1910	41,178,434	92,174,515	446	102	182,923	150,100	41,211,257	447	102	19.07	91	90
1911	39,679,000	93,527,941	424	97	318,372	105,506	39,891,866	428	97	20.54	98	101
1912	37,260,000	94,881,366	392	90	421,649	24,714	37,656,935	396	90	21.20	101	98
1913	36,030,000	96,234,791	374	86	868,368	18,376	36,879,992	383	87	26.36	126	124
1914	35,855,000	97,588,216	367	84	538,167	5,484	36,387,683	373	85	31.13	150	147
1915	37,067,000	98,941,641	374	86	439,185	21,666	37,484,519	379	86	33.38	160	155
1916	39,812,000	100,295,066	396	91	374,826	13,387	40,173,439	400	91	33.53	160	126
1917	41,689,000	101,648,491	410	94	239,719	18,213	41,910,506	412	94	35.88	172	96
1918	44,112,000	103,001,916	428	98	440,399	42,345	44,510,054	431	98	40.88	196	98
1919	45,085,000	104,355,341	432	99	575,328	83,039	45,567,289	436	99	44.22	211	98
1920	44,750,000	105,708,771	420	96	329,974	145,693	44,934,301	425	97	43.22	207	83
1921	42,870,000									31.41	150	

[1] Yearbook of Department of Agriculture, 1920, p. 729. Exports and imports include milk cows. Number of cattle on farms includes oxen.

[2] Relative purchasing power obtained by dividing the relative farm price per head by the weighted index of all commodities of Bureau of Labor Statistics, on the 1913 base converted to the 5-year base, 1909-1913.

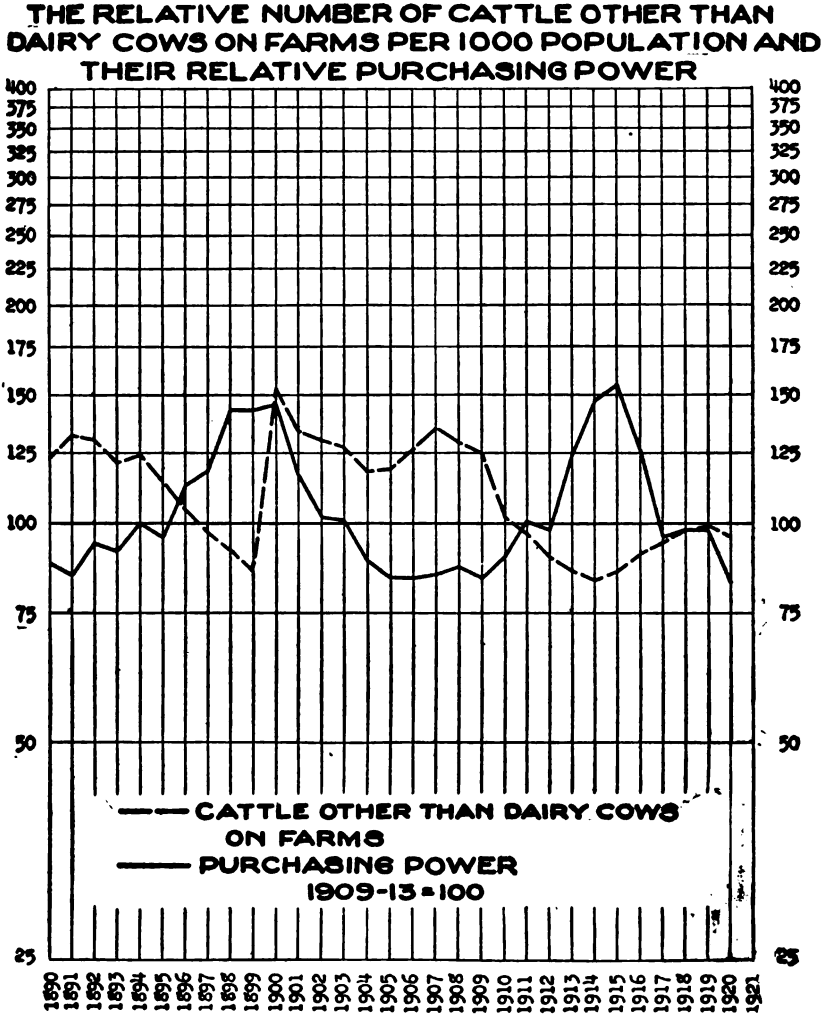
Digitized by Google

cattle per capita were accompanied by seven years of relatively low prices. Three years of low production, beginning with 1897, resulted in 3 years of relatively higher prices; 11 years of large production resulted in 11 years of low prices, while 10 years of low production brought 10 years of relatively high prices.

The purchasing power of beef cattle has fluctuated very widely and apparently without much direct relation to the relative farm price per head. On the whole, as measured in purchasing power, the production of beef cattle has not been profitable and the price to the farmer has not been sufficiently high to maintain production on a basis of increase equivalent to the increase in population.

The relative number of cattle other than dairy cows on farms and their relative purchasing power is graphically shown in the chart which follows.

CHART H-6.



Digitized by Google

HOGS.

Table H–10, on page 176, brings together the data showing the relation between total number of hogs per 1,000 population, exports, imports, and consumption.

The number of hogs on farms in recent years has exceeded the number in previous years. The number of hogs on farms per capita in the five years ending 1920 was greater than in any five preceding years, excepting the five years ending with 1894. Hog production in recent years has little more than kept pace with the population except in 1920, when a decrease in the price apparently resulted in a decrease in production. There appears to be no very clear or constant relation between the total or per capita production of hogs and the relative farm price.

It should be noted in connection with Table H–10, on page 176, that a very large increase in actual number of hogs and in the relative number of hogs per 1,000 population shown in 1900 is probably due to a census adjustment of figures rather than to an actual difference in the number of hogs on farms in 1900 as compared with 1899.

It should be noted in connection with Table H–10 that a very large increase in actual number of hogs and in the relative number of hogs per 1,000 population shown in 1900 is probably due to a census adjustment of figures rather than to an actual difference in the number of hogs on farms in 1900 as compared with 1899.

Table H–11, on page 177, shows the relation between the number of sheep on farms, the number of sheep per 1,000 population, exports, imports, and net production of sheep available for consumption, and the price per head and the purchasing power of sheep.

Digitized by Google

TABLE NO. H-10.—*The number of live hogs on farms, the number exported and imported, the number available for slaughter, the relative number produced, and the relative number available for slaughter per 1,000 population, the relative farm price per head, and the relative purchasing power, by years, 1890–1920.*

Year.	Number of hogs on farms Jan. 1.[1]	Population of United States.	Number of hogs per 1,000 population.	Relative number per 1,000 population (1909–1913=100).	Exports of live hogs (fiscal year beginning July 1.[2])	Imports of live hogs.[2]	Number available for slaughter.	Number available for slaughter per 1,000 population.	Relative number available per 1,000 population (1909–1913=100).	Farm price per head Jan. 1.[1]	Relative farm price Jan. 1 (1909–1913=100).	Relative purchasing power.[3]
1890	57,409,583	62,622,250	0.916	140	91,148	.....	57,318,435	915	141	$4.72	56	68
1891	50,625,000	63,959,482	.791	121	95,654	.....	50,529,346	790	121	4.15	49	58
1892	52,398,000	65,296,714	.802	123	31,963	.....	52,366,037	802	123	4.60	54	69
1893	46,095,000	66,633,946	.691	106	27,375	.....	46,067,625	691	106	6.41	76	96
1894	45,206,000	67,971,178	.660	101	1,553	.....	45,204,447	660	101	5.98	70	100
1895	44,166,000	69,308,410	.637	98	7,130	.....	44,158,870	637	97	4.97	59	83
1896	42,843,000	70,645,642	.606	93	21,049	.....	42,791,951	606	93	4.35	51	76
1897	40,600,000	71,982,874	.564	86	28,751	.....	40,571,249	564	87	4.10	48	71
1898	39,760,000	73,310,106	.541	83	14,031	.....	39,745,969	541	83	4.39	52	74
1899	38,652,000	74,647,338	.517	79	51,180	.....	38,600,819	517	79	4.40	52	68
1900	62,868,041	75,994,575	.827	127	22,318	.....	62,845,723	827	127	5.00	59	72
1901	56,982,000	77,612,569	.734	112	8,368	.....	56,973,632	734	113	6.20	73	90
1902	48,699,000	79,230,563	.614	94	4,031	.....	48,694,969	615	94	7.03	83	95
1903	46,923,000	80,848,557	.583	89	6,345	.....	46,916,654	580	89	7.78	92	106
1904	47,009,000	82,466,551	.570	87	44,496	.....	46,964,504	570	88	6.15	72	82
1905	47,321,000	84,084,545	.563	86	59,170	.....	47,261,829	562	86	5.99	71	82
1906	52,103,000	85,702,533	.607	93	24,262	.....	52,078,738	608	93	6.18	73	81
1907	54,794,000	87,320,533	.627	96	30,818	.....	54,763,182	627	96	7.62	90	94
1908	56,084,000	88,938,527	.636	97	18,655	.....	56,065,345	630	97	6.05	71	76
1909	54,147,000	90,556,521	.608	93	4,410	.....	54,142,519	598	92	6.55	77	78
1910, Apr. 15	58,185,000	92,174,515	.631	107	8,551	.....	58,176,449	631	97	9.17	108	107
1911	65,620,000	93,527,941	.701	106	19,038	.....	65,600,962	701	108	9.37	110	113
1912	65,410,000	94,881,366	.689	97	15,332	.....	65,394,667	689	106	8.00	94	91
1913	61,178,000	96,234,791	.636	92	10,122	.....	61,167,878	636	98	9.86	116	114
1914	58,933,000	97,588,216	.604	100	7,799	.....	58,925,201	604	93	10.40	122	120
1915	64,618,000	98,941,641	.653	104	20,048	.....	64,597,952	653	100	9.87	116	113
1916	67,766,000	100,295,066	.676	102	21,926	5,669	67,749,743	676	104	8.40	99	78
1917	67,503,000	101,648,491	.663	106	9,280	12,696	67,506,416	664	102	11.75	138	77
1918	70,978,000	103,001,916	.689	109	17,390	24,236	70,984,846	689	106	19.54	230	115
1919	74,584,000	104,355,341	.714	104	36,107	3,662	74,551,555	714	110	22.02	259	120
1920	71,727,000	105,708,771	.678	96	103,414	1,161	71,624,747	676	104	19.01	224	90
1921	66,649,000	.....	.....	.....	.....	.....	.....	.....	.....	12.99	153	.....

[1] Yearbook of Department of Agriculture, 1920, p. 753.
[2] Compiled from Commerce Reports.
[3] Relative purchasing power obtained by dividing the relative farm price per head by the weighted index of all commodities of Bureau of Labor Statistics, on the 1913 base converted to the 5-year base, 1909–1913.

Digitized by Google

TABLE H-11.—*The number of sheep on farms, the imports and exports of live sheep, the total available for consumption, the number available per 1,000 population, the farm price Jan. 1, and the relative production, consumption, price, and purchasing power, by years, 1890–1920.*

Years.	Number on farms.[1]	Population of United States.	Number of sheep per 1,000 population.	Relative number (1909–1913 =100).	Imports of live sheep (fiscal year beginning July 1.)[2]	Domestic exports of live sheep (fiscal year beginning July 1.)[2]	Total number available for consumption.	Number available for consumption per 1,000 population.	Relative number for consumption (1909–1913 =100).	Farm price Jan. 1.[1]	Relative farm price (1909–1913 =100).	Relative purchasing power (1909–1913 =100).[3]
1890	44,336,000	62,622,250	708	124				708	125	$2.27	60	72
1891	43,431,136	63,950,482	679	119				679	120	2.50	66	79
1892	44,938,365	65,296,714	688	121				688	121	2.58	68	87
1893	47,273,553	66,633,946	709	125	459,484	37,260	47,695,777	709	125	2.68	71	90
1894	45,048,017	67,971,178	669	118	242,568	132,370	45,158,215	669	118	1.98	53	76
1895	42,294,064	69,308,410	610	107	291,461	405,748	42,179,777	689	121	1.58	42	59
1896	38,298,783	70,645,642	542	95	322,962	491,565	38,130,180	539	95	1.70	45	67
1897	36,818,643	71,982,874	511	90	405,633	244,120	36,980,156	513	90	1.82	48	71
1898	37,656,960	73,310,106	513	90	392,314	199,690	37,849,584	516	91	2.46	65	93
1899	39,114,453	74,647,338	523	92	345,911	143,286	39,317,078	528	93	2.75	73	96
1900	41,883,000	75,994,575	551	97	381,792	125,972	42,139,020	554	98	2.93	78	95
1901	59,756,718	77,612,569	769	135	331,488	297,925	59,790,281	770	136	2.98	79	97
1902	62,039,091	79,230,563	783	138	266,953	358,720	61,947,324	782	138	2.65	70	80
1903	63,964,876	80,848,557	791	139	301,623	176,961	64,089,538	793	140	2.63	70	80
1904	51,630,144	82,466,551	626	110	238,094	301,313	51,566,925	625	110	2.59	69	78
1905	45,170,423	84,084,545	537	94	186,942	268,365	45,089,000	536	94	2.82	75	86
1906	50,631,619	85,702,533	590	104	240,747	142,690	50,729,676	592	104	3.54	94	104
1907	53,240,282	87,320,533	609	107	224,798	135,344	53,329,736	611	108	3.84	102	106
1908	54,631,000	88,938,527	614	108	224,765	101,000	54,754,765	615	108	3.88	103	111
1909	56,084,000	90,556,521	619	109	102,663	67,656	56,119,007	619	109	3.43	91	92
1910	52,448,000	92,174,515	569	100	126,152	44,517	52,529,635	569	100	4.12	109	108
1911	53,633,000	93,527,941	573	101	53,455	121,491	53,564,964	573	101	3.91	104	107
1912	52,362,000	94,881,366	551	97	23,588	157,263	52,228,325	550	97	3.46	92	89
1913	51,482,000	96,234,791	534	94	15,428	187,132	51,310,296	533	94	3.94	105	103
1914	49,719,000	97,588,216	509	89	223,719	152,600	49,790,119	510	90	4.02	107	105
1915	49,956,000	98,941,641	504	89	153,317	47,213	50,062,104	506	89	4.50	119	116
1916	48,625,000	100,295,066	484	85	235,659	52,278	48,808,381	487	86	5.17	137	108
1917	47,616,000	101,648,491	468	82	160,422	58,811	47,717,611	469	83	7.13	189	105
1918	48,603,000	103,001,916	471	83	177,681	7,959	48,772,722	475	84	11.82	313	157
1919	48,866,000	104,355,341	468	82	199,549	16,117	49,049,432	470	83	11.63	308	143
1920	47,114,000	105,708,771	445	78	161,243	80,723	47,194,520	465	82	10.52	279	113
1921	45,067,000	106,000,000	425	75						6.41	170	

[1] Yearbook of Department of Agriculture, 1920, p. 743.
[2] Yearbook of Department of Agriculture, 1919, p. 670; 1920 and 1921, compiled from Commerce Reports.
[3] Relative purchasing power obtained by dividing the relative farm price per head by the weighted index of all commodities of Bureau of Labor Statistics, on the 1913 base converted to the 5-year base, 1909–1913.

70678—H. Rept. 408, pt 1, 67-1——12

Digitized by Google

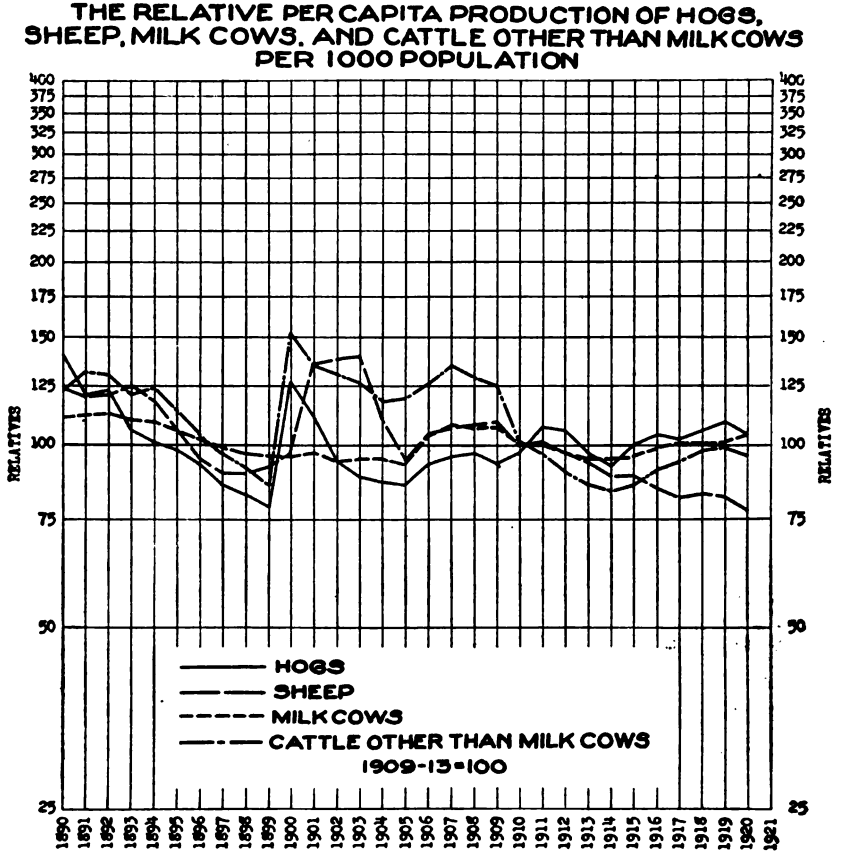
The actual number of sheep on farms in the United States in the decade ending 1920 was lower than in the decade ending in 1910 and higher in the decade ending in 1900. The number of sheep per 1,000 of population, however, in the last decade was less than in either of the two preceding 10-year periods. The number per thousand population averaged 501 in the 10 years ending 1920, as compared with 651 in the 10 years ending 1910 and 544 in the 10 years ending in 1900.

The price and purchasing power of sheep has risen rather steadily with the decrease in the number of sheep per 1,000 of population. The price of wool and mutton has not been sufficiently high to keep up relatively our supply of sheep. The decline in price in 1920 and the early months of 1921 seems likely to result in a further decline in the flocks of sheep, unless there should be very marked and sustained increase in price of wool and of sheep in the immediate future.

PER CAPITA PRODUCTION OF LIVE STOCK.

The relative production of hogs, sheep, and cattle, other than milk cows, is graphically shown in the following chart:

CHART H-7.



Digitized by Google

The sharp increase in per capita production of sheep and cattle other than milk cows in 1899 to 1900, as shown by the above chart, probably represents a readjustment of statistics rather than an actual increase of the number of sheep and cattle actually on farms, that is to say, the estimates for the years preceding 1900 were probably too low and were readjusted on the basis of the census figures, resulting in an apparent increase as shown by the statistics. Hogs and milk cows have apparently kept pace with the population. Cattle, other than milk cows, show a tendency to decline and at present they are on a basis slightly below the increase in population.

The production of sheep has fallen far behind the increase in population.

CONCLUSION.

Dairy cows and hogs on the farms in the United States are increasing in numbers and keeping pace with the population while sheep and cattle, other than dairy cows, are declining in number and not keeping pace with the relative increase in population. This trend reflects the efficiency of each of these groups of animals in producing edible solids out of organic matter. The dairy cow is the most economical producer of foods. The cow is only a near competitor of the pig and in the long run she slightly leads. In short periods the pig leads the cow only because of the longer period it takes the cow to mature. The amount of edible solids produced for each 100 pounds of digestible organic matter consumed by the different farm animals is as follows:

	Edible solids produced.		Edible solids produced.
Cow (milk)	18.0	Poultry (eggs)	5.1
Pig (dressed)	15.6	Poultry (dressed)	4.2
Cow (cheese)	9.4	Lamb (dressed)	3.2
Calf (dressed)	8.1	Steer (dressed)	2.8
Cow (butter)	5.4	Sheep (dressed)	2.6

It is obvious, however, that the prices paid for meat have not been such on the whole in recent years as to maintain production of animals. The price paid for corn has been sufficient to slightly increase corn production. The production of wheat has scarcely held its own on a per capita basis while the production of cotton has been declining. All of this occurred in the face of increased consumption of these products in the United States. Production of farm crops and farm animals seems certain to decline further unless sharply increased prices in the immediate future induce greater production. It seems likely, in any event, that a period of low production will result in a period of higher prices of farm products before production again overtakes consumption.

Digitized by Google

CHAPTER IX.

FACTORS INFLUENCING COSTS OF PRODUCTION.

In the preceding pages of this report the commission has compared wholesale prices of farm products with the wholesale prices of other groups of commodities. While such comparisons are of value as indicating the relative status of agriculture, compared with other industries, absolute prices can not be considered as a conclusive index either of profits or of well-being of farmers, because costs of production may increase more rapidly than the prices received and hence reduce the net gain. While there is more or less cost of production data in the record, this data is not sufficiently comprehensive, nor does it cover a sufficiently long period, to be an absolutely safe or accurate guide as to costs of production in their relation to prices.

The commission, therefore, has not undertaken to establish the profits or lack of profits to the farmer on the basis of a comparison of cost of production with prices. It is safe to say, however, that the prices received for the crop of 1920 were wholly inadequate to liquidate the costs of producing that crop.

THE QUALITY OF PRODUCTS.

Costs of production may change because of improvements in quality of production. The quality of fruits marketed in recent years has greatly improved. Milk now produced is a different commodity in quality from that produced in the last century. Improvement of quality usually means additional expenditures in cost of production. These additional expenditures, however, may be fully compensated by higher prices, or by increased quantity output or lower unit costs. In general, good quality costs more and brings better prices than poor quality, but on the whole no doubt it represents an economic saving.

INCREASING USE OF FERTILIZER.

The exhaustion of virgin soils, the exploitation of which caused the great expansion in the production of grain crops in the eighties, and early nineties, has necessitated the use of fertilizers, and these cost money, whether they are secured by keeping live stock on the farm, or by the direct purchase of commercial fertilizers, or by the use of green manures, or by better cultivation and rotation.

While the added cost of fertilizer may be fully compensated by increased quantity production or lower unit costs, the use of fertilizer may be expected to increase, and will add a new item of expense to cost of production in many sections of the country where fertilizer is not now used extensively.

There has been a huge increase in farm expenditures for commercial fertilizers, as shown in Table I–1, on page 181. Expenditures for fertilizers in various States have increased several fold in the past 20 years.

Digitized by Google

TABLE I–1.—*Total farm expenditures for fertilizer, 1899, 1909, and 1919, by divisions and by States.*[1]

Division or State.	1899	1909	1919	Per cent increase, 1909 over 1899.	Per cent increase, 1919 over 1899.
New England	4,297,705	9,407,759	18,322,697	+118.9	+ 326.3
Middle Atlantic	11,344,290	18,221,474	41,571,361	+ 60.6	+ 266.6
East North Central	5,866,520	8,058,881	30,779,341	+ 37.4	+ 424.6
West North Central	1,407,175	983,216	6,967,695	+ 30.1	+ 395.1
South Atlantic	22,732,670	59,625,130	185,987,241	+162.3	+ 718.1
East South Central	5,337,708	12,901,239	25,476,855	+141.7	+ 377.2
West South Central	1,374,116	3,225,927	9,997,382	+134.8	+ 627.4
Mountain	77,116	159,342	889,178	+106.6	+1053.0
Pacific	993,610	2,299,573	9,198,159	+131.4	+ 825.7
Maine	819,680	4,069,479	7,759,067	+396.3	+ 846.5
New Hampshire	367,980	512,580	526,180	+ 39.3	+ 43.2
Vermont	447,065	570,752	857,273	+ 27.7	+ 91.0
Massachusetts	1,320,600	1,965,682	3,906,723	+ 48.8	+ 195.0
Rhode Island	264,140	335,103	379,786	+ 26.9	+ 43.7
Connecticut	1,078,240	1,954,163	4,893,658	+ 81.2	+ 353.8
New York	4,493,050	7,142,265	15,067,371	+ 59.0	+ 235.2
New Jersey	2,165,320	4,277,604	10,742,682	+ 97.5	+ 396.1
Pennsylvania	4,685,920	6,801,605	15,761,308	+ 45.1	+ 236.3
Ohio	2,695,470	4,180,485	13,206,018	+ 55.1	+ 389.9
Indiana	1,553,710	2,189,695	8,734,698	+ 40.9	+ 462.1
Illinois	830,660	615,594	3,171,625	− 25.9	+ 281.8
Michigan	492,360	945,354	4,887,253	+ 92.0	+ 892.6
Wisconsin	294,320	127,753	779,750	− 56.6	+ 164.9
Minnesota	251,120	74,653	432,680	− 70.3	+ 72.3
Iowa	337,190	109,570	596,537	− 67.5	+ 76.9
Missouri	370,630	671,073	3,941,488	+ 81.1	+ 963.4
North Dakota	13,855	10,003	119,782	− 27.8	+ 764.7
South Dakota	12,940	11,294	198,186	− 12.7	+1431.6
Nebraska	153,080	31,021	699,985	− 79.7	+ 356.5
Kansas	268,360	75,602	979,037	− 71.8	+ 264.8
Delaware	539,040	864,577	1,222,329	+ 60.4	+ 123.6
Maryland	2,618,890	3,387,634	7,610,478	+ 29.4	+ 190.6
District of Columbia	22,600	16,975	23,267	− 24.9	+ 2.9
Virginia	3,681,790	6,932,455	17,564,769	+ 88.3	+ 377.0
West Virginia	405,270	528,937	1,709,546	+ 30.5	+ 321.8
North Carolina	4,479,030	12,262,533	48,796,694	+173.8	+ 989.4
South Carolina	4,494,410	15,162,017	52,546,795	+237.3	+1069.1
Georgia	5,738,520	16,860,149	46,196,434	+193.8	+ 705.0
Florida	753,120	3,609,853	10,316,929	+379.3	+1269.8
Kentucky	908,250	1,350,720	3,597,449	+ 48.7	+ 296.0
Tennessee	898,070	1,216,296	3,525,133	+ 35.4	+ 292.5
Alabama	2,599,290	7,630,952	14,066,108	+193.6	+ 441.0
Mississippi	932,098	2,703,271	4,288,165	+190.0	+ 360.0
Arkansas	172,510	596,553	2,572,678	+245.8	+1391.0
Louisiana	1,076,890	2,004,919	3,840,469	+ 86.2	+ 256.6
Oklahoma		29,092	891,288		
Texas	124,716	595,363	2,692,947	+377.4	+2059.0
Montana	3,940	12,323	126,232	+212.8	+3103.8
Idaho	17,150	20,737	106,121	+ 20.9	+ 518.7
Wyoming	12,700	5,302	89,149	− 58.3	+ 601.0
Colorado	23,225	61,113	294,448	+163.1	+1167.8
New Mexico	2,880	25,371	113,483	+780.9	+3840.0
Arizona	2,921	6,080	40,892	+108.1	+1299.7
Utah	14,300	20,037	108,956	+ 40.1	+ 661.0
Nevada		8,379	9,897		
Oregon	27,395	68,557	489,524	+150.3	+ 168.6
Washington	29,165	87,023	525,637	+198.4	+1702.0
California	937,050	2,143,993	8,182,998	+128.8	+ 773.2

[1] From the Bureau of the Census.

The total amount our farmers reported to the Census as spent for fertilizers increased from $53,430,910 in 1899 to $114,882,541 in 1909, an increase of 115 per cent. The expenditure reported for 1919 was $329,189,912, an increase of 186.5 per cent over 1909 and 513 per cent over 1899.

Of the total expenditure in 1919, 91.8 per cent was reported by the States east of the Mississippi River, as compared with about 95 per cent in 1909. Even in the Western States rotation of crops and the use of manures no longer suffice alone to support the productivity of the soil.

The States reporting the largest expenditures for fertilizer in 1909 and in 1919 follows.

Digitized by Google

TABLE I–2.—*States spending most for fertilizer.*

State.	Amount.	State.	Amount.
1919.		1909.	
South Carolina	$52,546,795	Georgia	$16,860,000
North Carolina	48,796,694	South Carolina	15,162,000
Georgia	46,196,434	North Carolina	12,263,000
Virginia	17,564,769	Alabama	7,631,000
Pennsylvania	15,761,308	New York	7,142,000
New York	15,067,371	Pennsylvania	6,802,000
Alabama	14,066,108	Virginia	6,932,000

INCREASING WAGES OF AGRICULTURAL LABOR.

While wages of employees in agriculture were relatively lower than they were in other industries during the past 30 years, they have increased at a relatively faster rate than wages in other industries. This is due in part to the necessity of meeting industrial competition and in part to the fact that permanent agricultural labor now must be of a skilled character, consequently commands a higher wage than formerly. The problem of securing permanent labor of the required experience and skill in competition with urban industries at prices which the farmer can afford to pay is one of increasing importance and difficulty.

The following Table I–3, shows the relative increase in wages to farm labor, compared with the relative increase in wages to industrial workers. It does not compare wages nor purchasing power. It shows that farm wages have increased 60 per cent from the low prices prevailing in the period from 1890 to 1899 to the higher price range of 1912 and 1914. During the same period urban wages advanced approximately 45 per cent.

TABLE I–3.—*Index numbers of industrial and agricultural wages, 1890 to 1920.*[1]

[1890–1899=100.]

Year.	Industrial.[2]	Agricultural.[3]	Year.	Industrial.[2]	Agricultural.[3]
1890	100.3	99.4	1906	123.5	.....
1891	100.3	99.7	1907	129.4	.....
1892	100.3	100.0	1908	129.4	.....
1893	100.3	102.0	1909	130.8	149.3
1894	97.4	93.3	1910	135.2	150.3
1895	98.8	92.6	1911	138.1	156.0
1896	100.3	92.6	1912	141.0	161.1
1897	100.3	105.1	1913	145.3	164.9
1898	100.3	105.1	1914	148.3	161.7
1899	101.7	110.7	1915	149.7	161.1
1900	106.1	.....	1916	161.3	178.1
1901	107.6	.....	1917	186.0	221.1
1902	111.9	126.8	1918	235.5	275.7
1903	116.3	.....	1919	267.4	322.9
1904	116.3	.....	1920	340.1	375.1
1905	119.2	.....			

[1] Prepared by Dr. H. C. Marshall, United States Department of Agriculture.
[2] Compiled from data in United States Bureau of Labor Statistics, Monthly Labor Review, vol. 12, No. 2, p. 74, February, 1921.
[3] Compiled from data in United States Department of Agriculture, Monthly Crop Reporter, vol. 6, No. 12, p. 134, December, 1920.

The following Table I–4, on page 183, shows that total expenditures for farm labor have about doubled in the period 1909 to 1919. It also shows that the total expenditures for feed in 1919 were $1,101,228,543, as compared with $299,839,857 in 1909, an increase of 267.3 per cent. The greater part of this increase is due to the higher prices prevailing in 1919 for hay, corn, oats, and mill feeds; but allowing for such increases in price, the increase is still significant, and results in considerable measure from the expansion of milk production and the feeding of cattle on farms.

Digitized by Google

TABLE I–4.—*Farm expenditures for labor and feed in the United States, by geographic divisions and States: 1919 and 1909.*[1]

Division or State.	Farm expenditures for labor.						Farm expenditures for feed.	
	Total.		Amount in cash.		Value of rent and board furnished.			
	1919	1909	1919	1909	1919	1909	1919	1909
United States	$1,363,454,380	$651,611,287	$1,101,586,456	$521,720,941	$261,867,924	$129,831,346	$1,101,228,543	$299,839,857
Geographic divisions:								
New England	53,756,424	34,500,407	43,686,874	27,603,492	10,069,550	6,896,915	69,538,522	34,613,964
Middle Atlantic	124,510,874	78,021,579	95,296,313	59,913,169	29,212,561	18,108,410	149,864,469	54,690,044
East North Central	239,989,280	117,880,195	183,294,713	91,591,170	56,694,567	26,289,025	197,538,879	40,611,121
West North Central	344,527,913	135,924,234	264,741,053	105,023,453	79,786,860	30,900,781	309,405,441	76,207,557
South Atlantic	104,545,971	66,607,245	89,074,885	55,413,285	15,471,086	11,193,960	60,536,800	19,255,280
East South Central	44,136,117	35,308,883	37,855,340	28,662,434	6,280,777	6,646,449	43,363,604	15,607,673
West South Central	164,344,233	59,980,738	147,324,289	52,219,927	17,019,944	7,760,811	121,862,450	24,723,146
Mountain	106,395,274	46,939,012	84,891,225	37,384,652	21,504,049	9,554,360	68,625,501	13,204,509
Pacific	181,248,294	76,448,994	155,419,764	63,918,359	25,828,530	12,530,635	80,492,877	20,920,563
New England:								
Maine	9,641,064	5,633,106	7,506,437	4,485,911	2,134,627	1,147,195	14,858,557	7,267,854
New Hampshire	4,520,816	3,374,126	3,665,259	2,690,006	855,557	684,120	8,725,716	4,614,938
Vermont	7,712,305	4,748,063	5,788,588	3,579,799	1,923,717	1,168,264	11,070,656	4,758,703
Massachusetts	16,577,123	12,101,969	13,929,305	9,906,209	2,647,818	2,195,750	20,272,851	10,878,178
Rhode Island	2,102,397	1,761,594	1,730,402	1,429,388	371,995	332,206	2,889,450	1,678,183
Connecticut	13,202,719	6,881,619	11,066,883	5,512,179	2,135,836	1,369,440	11,721,292	5,416,108
Middle Atlantic:								
New York	64,324,931	41,312,014	49,345,689	32,000,566	14,979,242	9,311,448	82,966,321	29,545,703
New Jersey	18,074,198	11,097,727	14,358,519	8,633,475	3,715,679	2,464,252	14,719,159	5,947,181
Pennsylvania	42,111,745	25,611,838	31,594,105	19,279,128	10,517,640	6,332,710	52,178,989	19,203,160
East North Central:								
Ohio	46,427,807	25,631,185	36,339,046	20,426,904	10,088,761	5,204,281	40,378,027	8,445,761
Indiana	32,867,304	17,682,079	25,608,743	14,013,473	7,258,561	3,668,606	42,306,030	6,893,901
Illinois	80,389,710	36,308,376	61,862,861	27,989,488	18,526,849	8,318,888	64,830,483	13,915,628
Michigan	32,167,716	19,063,082	24,902,349	15,073,667	7,265,367	3,989,415	22,104,883	5,682,915
Wisconsin	48,136,743	19,195,473	34,581,714	14,087,638	13,555,029	5,107,835	27,919,456	5,672,916
West North Central:								
Minnesota	49,811,218	22,330,149	36,450,774	16,673,777	13,360,444	5,656,372	22,940,650	5,041,925
Iowa	70,698,060	24,781,592	52,942,172	18,586,300	17,755,888	6,195,292	79,068,535	18,582,251
Missouri	40,115,464	18,644,695	33,037,414	14,970,635	7,078,050	3,674,060	60,171,516	17,148,008
North Dakota	37,063,815	21,740,149	27,678,182	17,198,082	9,385,633	4,542,067	12,382,661	2,003,028
South Dakota	32,599,070	12,831,944	24,355,965	9,908,389	8,243,105	2,923,555	16,908,707	3,049,255
Nebraska	46,366,802	15,028,468	35,515,466	11,422,188	10,851,336	3,606,280	60,518,850	12,567,838
Kansas	67,873,484	20,567,287	54,761,080	16,264,082	13,112,404	4,303,155	57,514,522	17,815,252

[1] Bureau of the Census.

Digitized by Google

TABLE I–4.—*Farm expenditures for labor and feed in the United States, by geographic divisions and States: 1919 and 1909*—Continued.

Division or State.	Farm expenditures for labor.						Farm expenditures for feed.	
	Total.		Amount in cash.		Value of rent and board furnished.		1919	1909
	1919	1909	1919	1909	1919	1909		
South Atlantic:								
Delaware	$2,807,879	$1,612,471	$2,052,218	$1,257,198	$755,661	$355,273	$1,490,252	$337,841
Maryland	16,721,294	8,802,172	12,915,060	6,743,157	3,806,234	2,059,015	8,044,715	2,445,065
District of Columbia	173,066	238,833	139,895	212,893	33,171	25,940	170,758	130,077
Virginia	21,808,507	13,354,194	17,851,986	10,822,816	3,956,521	2,531,378	12,432,456	3,504,660
West Virginia	5,815,727	4,035,764	4,786,810	3,203,924	1,028,917	831,840	5,639,713	1,938,233
North Carolina	12,035,960	9,220,564	10,818,456	7,643,783	1,217,504	1,576,781	12,291,850	3,151,190
South Carolina	15,336,438	10,770,758	13,687,695	9,351,384	1,648,743	1,419,374	5,903,625	1,830,815
Georgia	19,016,703	13,218,113	16,705,234	11,185,852	2,311,469	2,032,261	9,538,763	4,097,043
Florida	10,830,397	5,354,376	10,117,531	4,992,278	712,866	362,098	5,024,668	1,820,356
East South Central:								
Kentucky	18,152,309	12,243,851	15,292,169	10,007,302	2,860,140	2,236,549	16,016,669	4,014,998
Tennessee	11,226,472	8,448,059	9,647,363	7,036,564	1,579,109	1,411,495	11,165,456	3,570,551
Alabama	7,724,138	7,454,748	6,588,966	6,033,123	1,135,172	1,421,625	5,920,837	4,041,486
Mississippi	7,033,198	7,162,225	6,326,842	5,585,445	706,356	1,576,780	10,260,642	3,980,638
West South Central:								
Arkansas	13,207,550	7,654,571	12,068,268	6,304,169	1,139,282	1,350,402	17,725,489	4,275,587
Louisiana	21,418,393	16,704,125	19,699,806	15,298,744	1,718,587	1,405,381	12,232,235	3,784,140
Oklahoma	41,625,422	9,837,541	35,733,159	7,963,617	5,892,263	1,873,924	30,816,899	5,863,378
Texas	88,092,868	25,784,501	79,823,056	22,653,397	8,269,812	3,131,104	61,087,827	10,800,046
Mountain:								
Montana	21,344,016	10,930,477	15,603,271	8,258,350	5,740,745	2,672,127	19,791,034	1,741,071
Idaho	18,303,152	6,701,604	14,733,521	5,573,209	3,569,631	1,128,395	10,709,475	2,122,709
Wyoming	9,276,468	6,174,164	6,716,387	4,555,847	2,560,081	1,618,317	6,899,279	1,508,828
Colorado	28,292,609	10,818,465	23,146,568	8,770,753	5,146,041	2,047,712	18,430,975	4,592,799
New Mexico	6,438,120	3,645,423	5,259,834	2,985,826	1,178,286	659,597	5,370,823	1,527,037
Arizona	8,442,276	2,504,984	7,663,620	2,061,462	778,656	443,522	2,059,855	541,371
Utah	8,490,146	3,169,917	7,472,300	2,863,709	1,017,846	306,208	3,941,388	727,409
Nevada	5,808,487	2,998,978	4,295,724	2,315,496	1,512,763	678,482	1,422,672	443,285
Pacific:								
Washington	34,121,457	15,370,931	28,330,116	12,602,203	5,791,341	2,768,728	20,721,880	5,045,297
Oregon	21,030,685	11,101,864	17,161,595	9,110,241	3,869,090	1,991,623	13,390,428	3,198,363
California	126,096,152	49,976,199	109,928,053	42,205,915	16,168,099	7,770,284	46,380,569	12,676,903

Digitized by Google

INCREASING FARM VALUES.

The investments in farm lands and buildings increased from $34,801,125,697 in 1910, to $67,795,965,384 in 1920, an increase of 94.8 per cent. This value was no doubt above present values, but it reflects the property interests of the farmers in this country. The average value of land and buildings per farm was $10,514 in 1920, as compared with $5,471 in 1910. (See Table I–5, page 186.)

The interest on increased property investment in farms and buildings must be paid either out of increased production or higher money prices, or through economies and savings, where possible, either through greater efficiency of farm production, more economic marketing, or reduced standards of living.

Digitized by Google

TABLE I–5.—*Number, acreage, and value of farms in the United States, by geographic divisions and States: 1920 and 1910.*[1]

Division or State.	Number of farms.		Land in farms (acres).		Value of farm land and buildings.		Average value of land and buildings—			
							Per farm.		Per acre.	
	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910
United States	6,448,366	6,361,502	955,676,545	878,798,325	$67,795,965,384	$34,801,125,697	$10,514	$5,471	$70.94	$39.60
Geographic divisions:										
New England	156,564	188,802	16,990,642	19,714,931	917,468,584	718,544,808	5,860	3,806	54.00	36.45
Middle Atlantic	425,149	468,379	40,554,158	43,191,056	3,005,640,486	2,442,949,103	7,070	5,216	74.11	56.56
East North Central	1,084,744	1,123,489	117,739,160	117,929,148	16,357,408,156	8,873,991,594	15,080	7,899	138.93	75.25
West North Central	1,096,973	1,109,948	256,973,874	232,648,121	24,480,727,074	11,614,665,870	22,317	10,464	95.27	49.92
South Atlantic	1,158,976	1,111,881	97,806,524	103,782,255	5,204,968,813	2,486,436,474	4,491	2,236	53.22	23.96
East South Central	1,051,600	1,042,480	78,954,063	81,520,629	3,665,189,438	1,738,397,839	3,485	1,668	46.42	21.32
West South Central	996,087	943,186	173,156,841	169,149,976	6,331,224,217	3,128,596,882	6,356	3,317	36.56	18.50
Mountain	244,109	183,446	117,348,578	59,533,420	3,163,921,882	1,319,396,873	12,961	7,192	26.96	22.16
Pacific	234,164	189,891	56,152,705	51,328,789	4,669,416,734	2,478,146,254	19,941	13,050	83.16	48.28
New England:										
Maine	48,227	60,016	5,425,968	6,296,859	204,108,971	159,619,626	4,232	2,660	37.62	25.35
New Hampshire	20,523	27,053	2,603,806	3,249,458	89,995,870	85,916,061	4,385	3,176	34.56	26.44
Vermont	29,075	32,709	4,235,811	4,663,577	159,117,159	112,588,275	5,473	3,442	37.56	24.14
Massachusetts	32,001	36,917	2,494,477	2,875,941	247,587,831	194,168,765	7,737	5,260	99.25	67.51
Rhode Island	4,083	5,292	331,600	443,308	26,387,926	27,932,860	6,463	5,278	79.58	63.01
Connecticut	22,655	26,815	1,898,980	2,185,788	190,270,827	138,319,221	8,399	5,158	100.20	63.28
Middle Atlantic:										
New York	193,195	215,597	20,632,803	22,030,367	1,425,061,740	1,184,745,829	7,376	5,495	69.07	53.78
New Jersey	29,702	33,487	2,282,585	2,573,857	250,323,986	217,134,519	8,428	6,484	109.67	84.36
Pennsylvania	202,252	219,295	17,638,770	18,586,832	1,330,254,760	1,041,068,755	6,577	4,747	75.42	56.01
East North Central:										
Ohio	256,695	272,045	23,515,888	24,105,708	2,661,435,949	1,654,152,406	10,368	6,080	113.18	68.62
Indiana	205,126	215,485	21,063,332	21,299,823	2,653,643,973	1,594,275,596	12,937	7,399	125.98	74.85
Illinois	237,181	251,872	31,977,513	32,522,937	7,416,583,951	3,522,792,570	31,270	13,986	231.93	108.32
Michigan	196,447	206,960	19,034,204	18,940,614	1,437,862,310	901,138,299	7,319	4,354	75.54	47.58
Wisconsin	189,295	177,127	22,148,223	21,060,066	2,187,881,973	1,201,632,723	11,558	6,784	98.78	57.06
West North Central:										
Minnesota	178,478	156,137	30,221,758	27,675,823	3,301,168,325	1,262,441,426	18,496	8,085	109.23	45.62
Iowa	213,439	217,044	33,474,896	33,930,688	7,601,772,290	3,257,379,400	35,616	15,008	227.09	96.00
Missouri	263,004	277,244	34,774,679	34,591,248	3,062,967,700	1,716,204,386	11,646	6,190	88.08	49.61
North Dakota	77,690	74,360	36,214,751	28,426,650	1,488,521,495	822,656,744	19,160	11,063	41.10	28.94
South Dakota	74,655	77,644	34,523,775	26,016,892	2,472,697,091	1,005,080,807	33,122	12,945	71.62	38.63
Nebraska	124,421	129,678	42,338,836	38,622,021	3,723,536,255	1,813,346,935	29,927	13,983	87.96	46.95
Kansas	165,286	177,841	45,425,179	43,384,799	2,830,063,918	1,737,556,172	17,122	9,770	62.30	40.05

Digitized by Google

South Atlantic:										
Delaware	10,140	10,836	944,511	1,038,866	64,755,631	53,155,983	6,386	4,905	68.56	51.17
Maryland	47,908	48,923	4,757,999	5,057,140	386,596,850	241,737,123	8,070	4,941	81.25	47.80
District of Columbia	204	217	5,668	6,063	5,577,369	8,231,343	27,340	37,932	984.01	1,357.64
Virginia	186,242	184,018	18,561,112	19,495,636	1,022,898,216	532,058,062	5,492	2,891	55.11	27.29
West Virginia	87,289	96,685	9,569,790	10,026,442	410,783,406	264,390,954	4,706	2,735	42.93	26.37
North Carolina	269,763	253,725	20,021,736	22,439,129	1,076,392,960	456,624,607	3,990	1,800	53.76	20.35
South Carolina	192,693	176,434	12,461,945	13,512,028	816,308,650	332,888,081	4,236	1,887	65.50	24.64
Georgia	310,732	291,027	25,437,072	26,953,413	1,140,218,327	479,204,332	3,669	1,647	44.83	17.78
Florida	54,005	50,016	6,046,691	5,253,538	281,449,404	118,145,989	5,212	2,362	46.55	22.49
East South Central:										
Kentucky	270,626	259,185	21,612,772	22,189,127	1,305,158,936	635,459,372	4,823	2,452	60.39	28.64
Tennessee	252,774	246,012	19,510,856	20,041,657	1,024,979,894	480,522,587	4,055	1,953	52.53	23.98
Alabama	256,099	262,901	19,576,856	20,732,312	543,657,755	288,253,591	2,123	1,096	27.77	13.90
Mississippi	272,101	274,382	18,253,579	18,557,533	791,392,853	334,162,289	2,906	1,218	43.36	18.01
West South Central:										
Arkansas	232,604	214,678	17,566,353	17,416,075	773,617,226	309,166,813	3,326	1,440	44.04	17.75
Louisiana	135,463	120,546	10,019,822	10,439,481	474,038,793	237,544,450	3,499	1,971	47.31	22.75
Oklahoma	191,987	190,192	31,989,950	28,359,353	1,365,768,654	738,677,224	7,114	3,884	42.69	25.60
Texas	436,033	417,770	113,580,716	112,435,067	3,717,799,544	1,843,208,395	8,526	4,412	32.73	16.39
Mountain:										
Montana	57,677	26,214	35,070,656	13,545,603	776,767,529	251,625,930	13,468	9,599	22.15	18.58
Idaho	42,106	30,807	8,375,873	5,283,604	581,511,964	245,065,825	13,811	7,955	69.43	46.38
Wyoming	15,748	10,987	11,820,703	8,543,010	235,482,224	97,915,277	14,953	8,912	19.92	11.46
Colorado	59,934	46,170	24,462,014	13,532,113	866,013,660	408,518,861	14,449	8,848	35.40	30.19
New Mexico	29,844	35,676	24,409,633	11,270,021	221,814,212	111,830,999	7,432	3,135	9.09	9.92
Arizona	9,975	9,227	5,802,126	1,246,613	172,325,321	47,285,310	17,276	5,125	29.70	37.93
Utah	25,662	21,676	5,060,410	3,397,699	243,751,758	117,545,332	9,499	5,423	48.26	34.60
Nevada	3,163	2,689	2,357,163	2,714,757	66,255,214	39,609,339	20,947	14,730	28.11	14.59
Pacific:										
Washington	66,288	56,192	13,244,720	11,712,235	920,392,341	571,968,457	13,885	10,179	69.49	48.84
Oregon	50,206	45,502	13,542,318	11,685,110	675,213,284	455,576,309	13,449	10,012	49.86	38.99
California	117,670	88,197	29,365,667	27,931,444	3,073,811,109	1,450,601,488	26,122	16,447	104.67	51.93

[1] From preliminary reports of Fourteenth Census.

Digitized by Google

INVESTMENT IN MACHINERY AND EQUIPMENT.

Another element of importance in the cost of production is the increase in outlay necessary for machinery and equipment. In agriculture, as in industry, machinery has more and more taken the place of hand labor.

The outlay for the necessary farm equipment and machinery should ultimately be paid for out of the products of the farm, either in increased output, lower unit costs, or in higher money prices. There is nothing in the history of the development of agriculture in the last 30 years which indicates that either the interest on higher farm values or the increase in cost of machinery and equipment is likely to be paid for out of the increased production. To the extent that they can not be paid for out of increased production they must be paid for out of higher money prices or in lower unit costs if the standard of living on the farm is to be maintained.

The following statement, furnished the commission by the International Harvester Co. of America, gives wholesale prices of various items of farm machinery to dealers as of April 15 for years 1913–1921, inclusive, and also the proposed prices for 1922 effective September, 1921:

Digitized by Google

TABLE I–6.—*International Harvester Co. of America—comparative statement of prices to dealers as of April 15 for years 1913–1921; also proposed prices for 1922 (effective September, 1921), f. o. b. Chicago.*

Article.	1913	1914	1915	1916	1917	1918	1919	1920	1921	Proposed 1922 prices, effective September, 1921.
Grain binder, 6-foot, with bundle carrier	$102.50	$102.50	$102.50	$107.50	$130.00	$175.00	$175.00	$165.00	$172.00	$146.00
Cash discount	7.07	7.07	7.07	7.41	9.75	8.75	8.75	8.25	8.60	7.30
Net price	95.43	95.43	95.43	100.09	120.25	166.25	166.25	156.75	163.40	138.70
Mower, 5-foot, regular plain lift	36.00	37.00	37.00	39.00	48.00	65.00	65.00	62.00	65.75	56.00
Cash discount	2.48	2.55	2.55	2.69	3.60	3.25	3.25	3.10	3.29	2.80
Net price	33.52	34.45	34.45	36.31	44.40	61.75	61.75	58.90	62.46	53.20
Self-dump hay rake, 10-foot, 26 teeth	18.00	19.00	19.00	20.00	26.50	38.00	38.00	36.00	35.50	28.50
Quantity discount (20 or more)	.....	.....	.....	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cash discount	1.26	1.33	1.33	.95	1.28	1.85	1.85	1.75	1.73	1.38
Net Price	16.74	17.67	17.67	18.05	24.22	35.15	35.15	33.25	32.77	26.12
Side-delivery rake	45.00	46.00	46.00	47.00	62.00	75.00	75.00	72.50	71.75	.....
Quantity discount (20 or more)	.....	.....	2.00	2.00	2.00	2.00	2.00	2.00	2.00	.....
Cash discount	3.15	3.22	3.08	2.25	3.00	3.65	3.65	3.53	3.49	.....
Net price	41.85	42.78	40.92	42.75	57.00	69.35	69.35	66.97	66.26	.....
Hay loader, 6-foot, steel, with fore carriage	50.00	55.00	55.00	57.50	67.50	90.00	90.00	85.00	84.25	71.50
Quantity discount (20 or more)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Cash discount	3.36	3.71	3:71	2.78	3.28	4.40	4.40	4.15	4.11	3.48
Net price	44.64	49.29	49.29	52.72	62.22	83.60	83.60	78.85	78.14	66.02
Corn planter, No. 1, I. H. C., 30-inch open wheel with 80 rods wire	34.00	34.00	34.50	36.50	46.00	60.00	60.00	60.00	59.75	54.00
Quantity discount, lots of 40 except (*) lots of 20	.....	.....	1.00	*1.00	*1.00	1.50	1.50	1.50	2.00	2.00
Cash discount	2.38	2.38	2.35	1.78	2.25	2.93	2.93	2.93	2.89	2.60
Net price	31.62	31.62	31.15	33.72	42.75	55.57	55.57	55.57	54.86	49.40
Cultivator, 2-horse, riding, No. 4, 8-shovel, pin break	.....	23.50	24.50	26.00	34.50	50.00	50.00	50.00	50.00	40.00
Quantity discount, lots of 50 except (*) lots of 40	.....	.....	1.00	1.00	1.00	1.00	1.00	1.00	*1.00	*1.00
Cash discount	.....	1.65	1.65	1.25	1.68	2.45	2.45	2.45	2.45	1.95
Net price	.....	21.85	21.85	23.75	31.82	46.55	46.55	46.55	46.55	37.05

Digitized by Google

Article.	1913	1914	1915	1916	1917	1918	1919	1920	1921	Proposed 1922 prices, effective September, 1921.
Corn binder with bundle carrier	$102.50	$102.50	$102.50	$107.50	$130.00	$175.00	$175.00	$165.00	$172.00	$146.00
Cash discount	7.07	7.07	7.07	7.41	9.75	8.75	8.75	8.25	8.60	7.30
Net price	95.43	95.43	95.43	100.09	120.25	166.25	166.25	156.75	163.40	138.70
Ensilage cutter, type B, mounted	190.00	190.00	190.00	190.00	215.00	300.00	350.00	325.00	337.50	297.50
Cash discount	13.30	13.30	13.30	9.50	10.75	15.00	17.50	16.25	16.88	14.88
Net price	176.70	176.70	176.70	180.50	204.25	285.00	332.50	308.75	320.62	282.62
Grain drill, 12 by 7, single disk, plain	58.50	58.50	58.50	61.50	74.00	99.00	99.00	99.00	101.00	86.00
Quantity discount (20 or more)				2.00	2.00	2.00	2.00	2.00	2.00	2.00
Cash discount	4.10	4.10	4.10	4.17	3.60	4.85	4.85	4.85	4.95	4.20
Net price	54.40	54.40	54.40	55.33	68.40	92.15	92.15	92.15	94.05	79.80
Disk harrows, 12 by 16, with scrapers and weight boxes	21.50	22.50	22.50	24.50	32.80	42.00	42.00	40.00	42.00	33.75
Quantity discount: Lots of 30 except (*) lots of 20	*1.00	*1.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Cash discount	1.43	1.50	1.47	1.15	1.57	2.03	2.03	1.93	2.03	1.61
Net price	19.07	20.00	19.53	21.85	29.73	38.47	38.47	36.57	38.47	30.64
Spring-tooth harrow, 17-tooth, regular	13.00	13.50	13.50	14.50	20.25	24.25	24.25	22.50	22.50	18.00
Quantity discount: Lots of 50 except (*) lots of 25; (**) lots of 100	*.50	*.50	1.00	1.00	1.00	**1.00	**1.00	**1.00	.80	.80
Cash discount	.88	.91	.88	.68	.96	1.16	1.16	1.08	1.09	.86
Net price	11.62	12.09	11.62	12.82	18.29	22.09	22.09	20.42	20.61	16.34
Peg-tooth harrow No. 2, 60-tooth, ¾-inch teeth	9.50	10.00	10.00	11.00	14.50	20.00	20.00	19.00	19.35	15.50
Quantity discount: Lots of 50 except (*) lots of 25; (**) lots of 100	*.50	*.50	1.00	1.00	1.00	**1.00	**1.00	**1.00	**1.00	**1.00
Cash discount	.63	.67	.63	.50	.68	.95	.95	.90	.92	.73
Net price	8.37	8.83	8.37	9.50	12.82	18.05	18.05	17.10	17.43	13.77
Tractor 10/20 Titan				810.00	922.50	1,102.50	1,078.00	968.00	880.00	792.00
Quantity discount: Lots of 6 except (*) lots of 12; (**) carlots					51.25	61.25	*98.00	*88.00	**30.00	**27.00
Cash discount									25.00	25.00
Net price				810.00	871.25	1,041.25	980.00	880.00	825.00	740.00

Digitized by Google

Cream separator No. 2	48.50	48.50	48.50	51.00	53.00	57.50	65.00	75.00	67.50	67.50
Quantity discount: Lots of 25 except (*) lots of 10	*6.00	*6.00	*6.00	*6.00	8.00	8.00	8.00	8.00	8.00	8.00
Cash discount	2.98	2.98	2.98	3.60	2.25	2.48	2.85	3.35	2.98	2.98
Net price	39.52	39.52	39.52	41.40	42.75	47.02	54.15	63.65	56.52	56.52
Manure spreader No. 5, with wide spread attachment	100.00	95.00	95.00	100.90	122.50	160.00	160.00			
Quantity discount: Lots of 10 except (*) lots of 12	*2.50	*2.50	2.50	2.50	2.50	7.50	7.50			
Cash discount	6.83	6.48	6.48	7.80	6.00	7.62	7.62			
Net price	90.67	86.02	86.02	89.70	114.00	144.88	144.88			
Manure spreader No. 1 International (built in wide spread)								125.00	144.00	135.00
Quantity discount (14 or more)									5.00	5.00
Cash discount								6.25	6.95	6.50
Net price								118.75	132.05	123.50
Thrasher, 24 by 40 New Racine, with hand feed and 18-foot folding stacker	430.00	355.00	355.00	371.50	410.00	548.00	675.00	675.00	653.00	
Cash discount	30.10	24.85	24.85	26.00	28.70	38.36	33.75	33.75	32.65	
Net price	399.90	330.15	330.15	345.50	381.30	509.64	641.25	641.25	620.35	
Wagon 3½-inch, Standard	67.35	67.35	67.35	70.00	77.00	107.25	118.00	125.00	127.50	114.75
Quantity discount: Car lots	3.50	3.50	3.50	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Cash discount	3.19	3.19	3.19	3.35	3.70	5.21	5.75	6.10	6.23	5.59
Net price	60.66	60.66	60.66	63.65	70.30	99.04	109.25	115.90	118.27	106.16
Harvester thrasher, combined type, with auxiliary engine, net price					1,080.00	1,255.00	1,370.00	1,370.00	1,400.00	1,260.00
Corn lister, P. and O. No. 1, wide tread								89.00	92.75	74.50
Quantity discount, 15 or more								1.00	1.00	1.00
Cash discount								4.40	4.59	3.68
Net price								83.60	87.16	69.82
Tractor plow, No. 5, Little Genius, 3-furrow, 14-inch								183.75	173.00	138.50
Cash discount								9.19	8.65	6.93
Net price								174.56	164.35	131.57
Plow, horse-drawn, No. 2, Diamond sulky, 16-inch								67.50	70.50	56.50
Quantity discount, 15 or more								1.00	1.00	1.00
Cash discount								3.33	3.48	2.78
Net price								63.17	66.02	52.72
Disk harrow, tractor, 16 by 16 inch, with 16 by 16 inch tandem							112.00	112.00	121.00	97.00
Quantity discount, 15 or more							3.00	3.00	3.00	3.00
Cash discount							5.45	5.45	5.90	4.70
Net price							103.55	103.55	112.10	89.30

NOTE.—Prices are comparative as of April 15 for each year.

Digitized by Google

Table I–7, also furnished by the International Harvester Co. of America, shows the increases and decreases in prices of binding twine for years 1913–1921, inclusive.

TABLE I–7.—*International Harvester Co. of America—Comparative statement of standard and sisal twine prices to dealers as of date Apr. 15, years 1913–1921.*

	1913	1914	1915	1916	1917	1918	1919	1920	1921
Sisal or standard (500 feet)	$0.0950	$0.0900	$0.0825	$0.09625	$0.15625	$0.2325	$0.2125	$0.1500	$0.1450
Quantity discount (20,000 pounds or more)	.0025	.0025	.0025	.00250	.00250	.0025	.0025	.0025	.0025
Cash discount								.0074	.0071
Net price	.0925	.0875	.0800	.09375	.15375	.2300	.2100	.1401	.1354

Table I–8, supplied by the Simmons Hardware Co., of St. Louis, gives the wholesale prices of typical farm tools, 1913–1921, and the prices effective as of September 15, 1921.

TABLE I–8.

	1913	1914	1915	1916	1917	1918	1919	1920	1921	Sept. 15, 1921.
Axes:										
KY100, 3½–4½ pounds, single bit, dozen	$7.25	$7.75	$5.25	$7.75	$12.25	$14.85	$14.75	$17.50	$15.50	$15.50
KM153, 3½–4½ pounds, double bit, dozen	9.25	11.00	7.50	10.75	16.75	19.35	19.25	23.15	20.50	20.50
1400, 3½–4½ pounds, single bit, dozen	7.00	7.95	5.20	7.85	12.35	15.35	14.75	17.25	15.50	15.50
1450, 3½–4½ pounds, double bit, dozen	9.25	11.45	7.70	11.25	17.35	20.60	19.75	23.75	21.00	21.00
Hatchets:										
KS/2, shingling, do	5.50	5.75	5.75	5.85	8.75	14.75	14.00	19.25	15.75	15.75
KL/2, lathing, do	5.50	5.75	5.75	5.85	8.75	14.75	14.00	19.25	15.75	15.75
ES/2, shingling, do	4.75	4.50	4.50	4.50	7.25	13.50	12.00	17.00	14.40	14.40
EL/2, lathing, do	4.75	4.50	4.50	5.00	7.25	12.00	12.00	17.00	14.40	14.40
Saws:										
D1046, crosscut, each	2.08	2.08	2.22	2.57	3.42	4.32	4.32	5.05	4.50	4.50
D2046, crosscut, do	1.49	1.49	1.49	1.70	2.28	3.00	3.00	3.55	3.15	3.15
D3014, crosscut (1-man), each	1.50	1.49	1.49	1.72	2.28	2.70	2.72	3.20	2.90	2.90
D3024, crosscut (1-man), each	1.65	1.61	1.61	1.72	2.48	3.00	2.88	3.50	3.15	3.15
12/26, hand, dozen	19.16	20.12	20.12	23.23	26.85	35.00	35.00	42.40	34.95	34.95
Forks:										
K305, hay, do	5.75	6.00	6.00	6.85	8.75	10.75	10.75	12.75	13.00	12.60
K504, manure, do	8.50	8.75	8.75	10.00	11.50	14.25	14.25	16.75	17.00	16.50
E305, hay, do	5.25	5.50	5.25	5.25	7.00	10.00	10.00	11.50	11.75	10.50
E504, manure, do	7.75	8.00	7.50	7.50	9.25	12.25	12.25	14.75	15.00	13.35
Hoes:										
KG207½, garden, do	4.25	4.35	4.35	5.00	6.25	8.00	8.75	9.50	9.75	9.50
Do, do	3.75	3.85	3.75	4.25	5.25	7.00	7.25	8.75	9.00	7.70
KC/107, cotton, do	4.25	4.50	4.25	4.15	5.50	7.25	7.25	8.65	8.90	8.60
Do, do	4.00	4.15	3.85	4.00	5.25	6.75	6.75	8.15	8.40	8.15
Shovels:										
KDR2, D-handle, dirt, dozen	8.50	8.00	8.00	8.00	12.00	18.50	16.00	20.15	15.25	15.25
CDS2, D-handle, dirt, dozen	6.00	6.00	5.56	6.35	9.00	15.50	13.00	17.00	.....	10.00
Spades:										
KSD2, dozen	8.50	8.00	8.00	8.00	12.00	18.50	16.00	20.15	15.25	15.25
CSD2, do	6.00	6.00	5.56	6.35	9.00	15.50	13.00	17.00	.....	10.00
Grain scoops:										
KDW6, do	8.50	9.50	8.50	8.75	14.80	23.00	20.00	23.75	17.50	17.50
CDW6, do	6.00	6.25	6.00	6.50	10.75	17.75	16.00	19.50	14.40	14.00

Digitized by Google

To these prices must be added, in order to obtain an adequate picture of the cost to the farmer, the cost of transportation and the retailer's margin of cost and profit. These tables, however, indicate when compared with the prices of farm products, particularly in recent months, the difficulty which has confronted the farmer in attempting to pay cost of production out of greatly reduced prices of farm products.

The following table, I–9, furnished by the Western Pine Manufacturers' Association, gives wholesale prices of different dimensions of common pine lumber ordinarily used by the farmer, in 1913–1921, inclusive:

TABLE I–9.—*Western Pine Manufacturers Association—Statement of lumber prices for the years 1913 to 1921, inclusive, during the month of August, showing prices on five common items.*

	Aug. 23, 1913.	Aug. 22, 1914.	Aug. 21, 1915.	Aug. 26, 1916.	Aug. 18, 1917.	Aug. 17, 1918.	Aug. 23, 1919.	Aug. 21, 1920.	Aug. 20, 1921.
Western white pine:									
No. 2 common	$16.46	$15.94	$14.52	$17.48	$26.22	$30.11	$38.98	$50.73	$27.34
No. 3 common	13.09	11.82	10.20	13.99	22.13	26.89	30.65	39.32	15.53
Beveled siding (b. m.)	37.76	30.88	27.46	27.80	47.24	50.16	58.56	90.83	84.58
F. and L.:									
No. 1 dimension	12.49	10.53	8.22	13.23	19.60	22.56	29.03	29.55	12.60
Timbers and plank	13.57	10.94	9.56	15.20	20.90	23.03	33.23	33.47	19.82

The following table, I–10, gives the retail prices of the same qualities and classes of lumber given in table I–9, arrived at by applying to the prices in Table I–9 fixed average freight and retailer's margin, estimated for each year:

TABLE I–10.—*Statement of retail lumber prices for the years 1913–1921, inclusive, during the month of August, showing prices on 5 common items.*

	Aug. 23, 1913.	Aug. 22, 1914.	Aug. 21, 1915.	Aug. 26, 1916.	Aug 18, 1917.	Aug. 17, 1918.	Aug. 23, 1919.	Aug. 21, 1920.	Aug. 20, 1921.
Western white pine:									
No. 2 common	$32.45	$31.80	$30.02	$33.72	$48.38	$53.44	$68.14	$87.38	$55.69
No. 3 common	28.23	26.65	24.62	29.36	43.06	49.25	56.90	71.98	40.33
Beveled siding (b. m.)	59.07	50.47	46.20	46.62	75.71	79.50	94.58	141.52	130.10
F. and L.:									
No. 1 dimensions	27.48	25.03	22.15	28.41	39.78	43.62	54.71	58.79	36.53
Timbers and plank	28.83	25.55	23.82	30.87	41.47	44.23	60.38	64.08	46.26

A few years ago tractors were unknown to American farms. Now 1 farm out of every 28 uses tractors. The States with the highest percentage of all farms using tractors on January 1, 1920, were: South Dakota, 16.3 per cent; North Dakota, 15.2 per cent; Montana, 12 per cent; California, 10.3 per cent; Kansas, 9.8 per cent; Illinois, 9.3 per cent; and Iowa, 9.1 per cent. The States with the largest number of tractors were: Illinois, 23,102; Iowa, 20,270; Kansas, 17,177; Minnesota, 15,503; California, 13,852; North Dakota, 13,006; South Dakota, 12,939; and Nebraska, 11,106. These eight States reported one-half of all the tractors, or almost one for every nine farms. Motor trucks are found on about 2 farms out of every 100.

Digitized by Google

About 31 farms (30.7) out of every 100 now report automobiles. Automobiles were reported for more than half the farms in Nebraska, Iowa, South Dakota, Kansas, Minnesota, North Dakota, California, and Illinois.

The extent to which investments in tractors, trucks, automobiles, and other farm machinery are justifiable in reducing the cost of production by increasing quantity output or increasing efficiency of production is a problem which must be solved with reference to the conditions existing upon each farm. No general conclusion upon this question can be arrived at without more data than it is possible for this commission to obtain in the limited time available to it.

Considering the entire question from the standpoint of agriculture as a whole, due consideration must be given to the necessity and desirability of increasing satisfactions and conveniences of farm life within the limits of the economic rewards which the industry should afford those engaged in it.

THE SIZE OF AMERICAN FARMS.

The expansion in the use of machinery has brought expansion in the size of farms. We have competed with the world in agricultural production by increasing output per unit of labor as distinct from output per acre. The number of farms increased but 1.4 per cent in the last decade. As shown in Table I–11, on page 195, the average acreage per farm increased from 138.1 in 1910 to 148.2 in 1920, or 2.9 per cent. All land in farms increased 8.7 per cent, and improved land increased 6 per cent, whereas "woodland" decreased 11.7 per cent. As shown in Table I–13, on page 198, farms have increased in size in Arizona, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Michigan, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Vermont, and West Virginia.

Digitized by Google

TABLE I-11.—*Number of farms, and acreage of all land, improved land, woodland, and other unimproved land in farms, by geographic divisions and States, 1920 and 1910.*

Division or State.	Number of farms.		Land in farms (acres).								Average per farm.			
			Total.		Improved land.		Woodland.		Other unimproved land.		All land (acres).		Improved land (acres).	
	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910
United States	6,448,366	6,361,502	955,676,545	878,798,325	506,982,301	478,451,750	168,615,122	190,365,353	280,079,122	209,481,022	148.2	138.1	78.6	75.2
Geographic divisions:														
New England	180,354	188,302	16,990,642	19,714,981	6,114,601	7,254,904	7,020,311	7,852,913	3,855,730	4,607,114	108.5	104.4	39.1	38.4
Middle Atlantic	425,149	466,379	40,554,158	43,191,056	26,566,084	29,320,894	8,643,518	9,255,715	5,345,556	4,614,447	95.4	92.2	62.5	62.6
East North Central	1,054,744	1,123,489	117,789,160	117,989,148	87,895,589	88,947,238	18,061,580	18,109,180	11,782,061	10,872,740	108.5	105.0	81.0	79.2
West North Central	1,096,973	1,109,948	256,973,874	232,648,121	173,725,273	164,284,862	18,845,091	17,969,615	64,403,510	50,393,644	234.3	209.6	158.4	148.0
South Atlantic	1,158,976	1,111,881	97,806,594	103,782,255	48,531,172	48,479,733	41,814,999	48,904,880	7,460,443	6,397,692	84.4	93.3	41.9	43.6
East South Central	1,061,600	1,042,480	78,964,063	81,530,629	44,380,132	43,946,846	28,471,124	32,287,681	6,102,807	5,295,102	75.1	78.2	42.2	42.2
West South Central	996,067	943,186	173,186,841	169,149,976	65,731,153	58,264,273	30,490,664	44,055,394	76,929,004	66,830,309	173.8	179.3	66.0	61.8
Mountain	244,109	183,446	117,348,578	69,833,420	30,117,814	15,915,002	6,896,961	4,109,061	80,343,783	39,809,357	480.7	380.5	123.4	86.8
Pacific	234,164	189,891	56,152,705	51,328,789	23,921,533	22,038,008	8,374,944	8,321,144	23,856,228	20,969,637	239.8	270.3	102.2	116.1
New England:														
Maine	48,237	60,016	5,425,968	6,296,359	1,977,329	2,360,667	2,447,597	2,775,521	1,001,042	1,160,581	112.5	104.9	41.0	39.3
New Hampshire	20,523	27,053	2,603,306	3,249,458	702,902	929,185	1,299,658	1,502,389	601,066	817,884	126.9	120.1	34.2	34.3
Vermont	29,075	32,709	4,235,811	4,663,577	1,691,595	1,663,965	1,428,309	1,566,698	1,115,907	1,462,914	145.7	142.6	58.2	50.0
Massachusetts	32,001	36,917	2,494,477	2,875,941	908,834	1,164,501	1,030,386	1,064,563	555,257	646,877	77.9	77.9	28.4	31.5
Rhode Island	4,063	5,292	331,600	443,308	132,855	178,344	130,462	185,909	68,283	79,055	81.2	83.8	32.5	33.7
Connecticut	22,655	26,815	1,898,980	2,185,788	701,086	988,252	683,719	757,743	514,175	439,783	83.8	81.5	30.9	36.9
Middle Atlantic:														
New York	193,195	215,597	20,632,803	22,030,367	13,158,781	14,944,069	4,160,567	4,496,145	3,313,455	2,750,153	106.8	102.2	68.1	68.8
New Jersey	29,702	33,487	2,282,585	2,573,857	1,555,607	1,803,336	454,768	538,131	272,210	232,390	76.8	76.9	52.4	53.9
Pennsylvania	202,252	219,295	17,638,770	18,586,832	11,850,696	12,673,519	4,028,183	4,281,439	1,759,891	1,631,874	87.2	84.8	58.6	57.8
East North Central:														
Ohio	256,695	272,045	23,515,888	24,108,708	18,542,353	19,227,969	3,198,929	3,265,376	1,774,606	1,602,363	91.6	88.6	72.2	70.7
Indiana	205,126	215,485	21,063,332	21,299,823	16,680,212	16,931,252	3,141,042	3,370,791	1,242,078	997,780	102.7	98.8	81.3	78.6
Illinois	237,181	251,872	31,977,513	32,522,937	27,294,517	28,048,323	3,102,579	3,147,879	1,580,417	1,326,735	134.8	129.1	115.1	111.4
Michigan	196,447	206,960	19,034,204	18,940,614	12,926,241	12,832,078	3,217,100	2,927,554	2,890,863	3,180,982	96.9	91.5	65.8	62.0
Wisconsin	189,295	177,127	22,148,293	21,060,066	12,452,216	11,907,606	5,401,910	5,377,580	4,294,967	3,774,880	117.0	118.9	65.8	67.2
West North Central:														
Minnesota	178,478	156,137	30,221,758	27,675,823	21,481,710	19,643,533	4,482,656	3,922,391	4,257,392	4,109,899	169.3	177.3	120.4	125.8
Iowa	213,439	217,044	33,474,896	33,930,688	28,606,951	29,491,199	2,295,274	2,314,115	2,572,671	2,125,374	156.8	156.3	134.0	135.9
Missouri	263,004	277,244	34,774,679	34,591,248	24,832,966	24,881,186	8,553,857	8,918,972	1,387,856	1,091,090	132.2	124.8	94.4	88.7
North Dakota	77,990	74,360	36,214,751	28,426,660	24,563,178	20,455,092	679,836	421,877	10,971,737	7,549,681	466.1	382.3	316.2	275.1
South Dakota	74,655	77,644	34,523,775	26,016,892	19,051,922	15,827,208	552,652	383,144	14,919,201	9,806,540	462.4	335.1	255.2	203.8
Nebraska	124,421	129,678	42,338,836	38,622,081	24,587,786	24,382,577	987,728	803,206	16,783,327	13,436,238	340.3	297.8	197.6	188.0
Kansas	165,286	177,841	45,425,179	43,284,709	30,600,760	29,904,067	1,313,093	1,206,910	13,511,326	12,274,822	274.8	244.0	185.1	168.2

Digitized by Google

TABLE I–11.—*Number of farms, and acreage of all land, improved land, woodland, and other unimproved land in farms, by geographic divisions and States, 1920 and 1910*—Continued.

Division or State.	Number of farms.		Land in farms (acres).								Average per farm.			
			Total.		Improved land.		Woodland.		Other unimproved land.		All land (acres).		Improved land (acres).	
	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910
South Atlantic:														
Delaware	10,140	10,836	944,511	1,038,866	653,052	713,538	222,658	252,032	68,801	73,296	93.1	95.9	64.4	65.8
Maryland	47,908	48,923	4,757,999	5,057,140	3,136,728	3,354,767	1,327,221	1,467,333	294,050	235,040	99.3	103.4	65.5	68.6
District of Columbia	204	217	5,668	6,063	4,258	5,133	828	689	582	241	27.8	27.9	20.9	23.7
Virginia	186,242	184,018	18,561,112	19,495,636	9,460,492	9,870,058	7,907,352	8,414,680	1,193,268	1,210,898	99.7	105.9	50.8	53.6
West Virginia	87,289	96,685	9,569,790	10,026,442	5,520,306	5,521,757	3,469,444	3,968,836	580,038	535,849	109.6	103.7	63.2	57.1
North Carolina	269,763	253,725	20,021,736	22,439,129	8,198,409	8,813,056	10,299,547	12,451,739	1,523,780	1,174,334	74.2	88.4	30.4	34.7
South Carolina	192,693	176,434	12,461,945	13,512,028	6,206,644	6,097,999	5,318,641	6,339,142	936,660	1,074,887	64.7	76.6	32.2	34.6
Georgia	310,732	291,027	25,437,072	26,953,413	13,054,010	12,298,017	10,488,428	13,002,741	1,894,634	1,652,655	81.9	92.6	42.0	42.3
Florida	54,005	50,016	6,046,691	5,253,538	2,297,271	1,805,408	2,780,790	3,007,638	968,630	440,492	112.0	105.0	42.5	36.1
East South Central:														
Kentucky	270,626	259,185	21,612,772	22,189,127	13,975,746	14,354,471	6,018,280	6,951,626	1,618,746	883,030	79.9	85.6	51.6	55.4
Tennessee	252,774	246,012	19,510,856	20,041,657	11,185,302	10,890,484	7,080,169	8,007,733	1,245,385	1,143,440	77.2	81.5	44.3	44.3
Alabama	256,099	262,901	19,576,856	20,732,312	9,893,407	9,693,581	8,301,177	9,444,764	1,382,272	1,593,967	76.4	78.9	38.6	36.9
Mississippi	272,101	274,382	18,253,579	18,557,533	9,325,677	9,008,310	7,071,498	7,883,558	1,856,404	1,665,665	67.1	67.6	34.3	32.8
West South Central:														
Arkansas	232,604	214,678	17,566,353	17,416,075	9,238,893	8,076,254	7,393,523	8,511,510	933,937	828,311	75.5	81.1	39.7	37.6
Louisiana	135,463	120,546	10,019,822	10,439,481	5,626,226	5,276,016	3,614,040	4,316,561	779,556	846,904	74.0	86.6	41.5	43.8
Oklahoma	191,987	190,192	31,989,950	28,859,353	18,488,105	17,551,337	4,220,467	3,568,910	9,281,378	7,739,106	166.6	151.7	96.3	92.3
Texas	436,033	417,770	113,580,716	112,435,067	32,377,929	27,360,666	15,268,654	27,658,413	65,934,133	57,415,988	260.5	269.1	74.3	65.5
Mountain:														
Montana	57,677	26,214	35,070,656	13,545,603	11,007,278	3,640,309	1,646,462	595,870	22,416,916	9,309,424	608.1	516.7	190.8	138.9
Idaho	42,106	30,807	8,375,873	5,283,604	4,511,680	2,778,740	820,876	584,556	3,043,317	1,920,308	198.9	171.5	107.2	90.2
Wyoming	15,748	10,987	11,820,703	8,543,010	2,113,951	1,256,160	421,716	252,152	9,285,036	7,034,698	750.6	777.6	134.2	114.3
Colorado	59,934	46,170	24,462,014	13,532,113	7,744,757	4,302,101	1,415,420	891,698	15,301,837	8,338,314	408.1	293.1	129.2	93.2
New Mexico	29,844	35,676	24,409,633	11,270,021	1,717,224	1,467,191	1,817,460	1,491,025	20,874,949	8,311,805	817.9	315.9	57.5	41.1
Arizona	9,975	9,227	5,802,126	1,246,613	712,803	350,173	523,648	100,061	4,565,675	796,379	581.7	135.1	71.5	38.0
Utah	25,662	21,676	5,050,410	3,397,699	1,715,380	1,368,211	212,762	145,510	3,122,268	1,883,978	196.8	156.7	66.8	63.1
Nevada	3,163	2,689	2,357,163	2,714,757	594,741	752,117	28,637	48,209	1,733,785	1,914,431	745.2	1,009.6	188.0	279.7
Pacific:														
Washington	66,288	56,192	13,244,720	11,712,235	7,129,343	6,373,311	1,813,061	1,541,551	4,302,316	3,797,373	199.8	208.4	107.6	113.4
Oregon	50,206	45,502	13,542,318	11,685,110	4,913,851	4,274,803	2,309,596	2,237,826	6,318,871	5,172,481	269.7	256.8	97.9	93.9
California	117,670	93,197	29,365,667	27,931,444	11,878,339	11,389,894	4,252,287	4,541,767	13,235,041	11,999,783	249.6	316.7	100.9	129.1

Digitized by Google

TABLE I–12.—*Number of farms in the United States, by size, 1920 and 1910.*

Size group.	Number of farms.		Increase.[1]	
	Jan. 1, 1920.	Apr. 15, 1910.	Number.	Per cent.
Total	6,448,366	6,361,502	86,864	1.4
Under 20 acres	796,534	839,166	−42,632	− 5.1
Under 3 acres	20,350	18,033	2,317	12.8
3 to 9 acres	268,422	317,010	−48,588	−15.3
10 to 19 acres	507,762	504,123	3,639	0.7
20 to 49 acres	1,503,734	1,414,376	89,358	6.3
50 to 99 acres	1,474,753	1,438,069	36,684	2.6
100 to 174 acres	1,449,659	1,516,286	−66,627	− 4.4
175 to 499 acres	1,006,487	978,175	28,312	2.9
175 to 259 acres	530,795	534,191	− 3,396	− 0.6
260 to 499 acres	475,692	443,984	31,708	7.1
500 acres and over	217,199	175,430	41,769	23.8
500 to 999 acres	149,812	125,295	24,517	19.6
1,000 acres and over	67,387	50,135	17,252	34.4
Per cent of total:				
Under 20 acres	12.4	13.2	.....	.....
20 to 49 acres	23.3	22.2	.....	.....
50 to 99 acres	22.9	22.6	.....	.....
100 to 174 acres	22.5	23.8	.....	.....
175 to 499 acres	15.6	15.4	.....	.....
500 acres and over	3.4	2.8	.....	.....

[1] A minus sign (−) denotes decrease.

Digitized by Google

TABLE I–13.—*Number of farms in the United States, by size, for geographic divisions and States: 1920 and 1910.*

Division and State.	Total number of farms.		Under 20 acres.		20 to 49 acres.		50 to 59 acres.		100 to 174 acres.		175 to 499 acres.		500 acres and over.	
	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910
United States	6,448,366	6,361,502	796,534	839,166	1,503,734	1,414,376	1,474,753	1,438,089	1,449,659	1,516,286	1,006,487	978,175	217,199	175,430
Geographic divisions:														
New England	156,564	188,802	25,886	34,304	27,117	33,822	38,036	45,932	37,993	44,019	25,173	28,008	2,359	2,717
Middle Atlantic	425,149	468,379	65,725	80,919	70,492	78,375	120,324	130,702	116,010	123,756	50,437	52,310	2,161	2,317
East North Central	1,084,744	1,123,489	90,703	108,283	172,052	197,164	335,439	340,940	325,390	315,607	155,489	155,585	5,671	5,910
West North Central	1,096,973	1,109,948	46,093	52,536	81,821	91,971	170,903	181,843	351,032	366,699	366,449	346,875	80,675	68,054
South Atlantic	1,158,976	1,111,881	187,326	186,956	401,259	354,207	290,114	251,901	178,311	181,396	99,853	117,899	15,133	19,582
East South Central	1,051,600	1,042,480	203,187	211,614	373,138	350,256	235,444	225,976	152,992	157,414	77,078	86,207	9,761	10,923
West South Central	996,087	943,186	97,877	102,044	296,730	251,444	235,213	216,860	212,166	222,794	120,428	118,416	33,673	31,628
Mountain	244,109	183,446	22,071	23,426	25,392	19,383	26,896	19,330	45,855	64,783	77,982	41,676	45,913	14,948
Pacific	234,164	189,891	57,666	39,084	55,733	37,754	32,384	24,585	32,910	37,908	33,618	31,109	21,853	19,451
New England:														
Maine	48,227	60,016	4,525	7,713	6,768	9,492	14,277	17,895	14,425	16,633	7,683	8,203	549	590
New Hampshire	20,523	27,053	2,897	4,595	3,375	4,509	4,888	6,248	4,986	6,247	3,809	4,774	568	680
Vermont	29,075	32,709	3,350	4,578	2,924	3,481	5,199	5,910	8,777	9,492	5,196	8,516	629	732
Massachusetts	32,001	36,917	9,505	10,606	7,532	8,890	6,834	7,981	4,883	5,703	2,895	3,325	347	412
Rhode Island	4,083	5,292	936	1,377	983	1,144	1,031	1,264	718	945	357	487	58	75
Connecticut	22,655	26,815	4,673	6,035	5,535	6,306	5,807	6,634	4,199	4,999	2,233	2,613	208	228
Middle Atlantic:														
New York	193,195	215,597	26,540	34,188	27,267	31,047	50,784	56,821	56,929	61,031	30,461	31,163	1,214	1,347
New Jersey	29,702	33,487	7,222	8,073	6,763	7,607	7,367	8,194	6,251	7,207	1,950	2,235	149	171
Pennsylvania	202,252	219,295	31,963	38,658	36,462	39,721	62,173	65,687	52,830	55,518	18,026	18,912	798	799
East North Central:														
Ohio	256,695	272,045	31,479	38,913	44,535	50,331	86,337	88,047	69,738	68,746	23,773	25,113	833	895
Indiana	205,126	215,485	19,916	23,644	34,949	40,161	65,066	67,221	57,895	57,261	26,263	26,107	1,035	1,091
Illinois	237,181	251,872	16,710	20,294	26,989	33,322	51,920	57,917	81,459	80,539	58,186	57,755	1,917	2,046
Michigan	196,447	206,960	12,744	14,785	40,765	49,890	71,391	73,748	52,645	50,622	18,075	17,143	827	772
Wisconsin	189,295	177,127	9,854	10,647	24,814	23,460	60,725	54,007	63,658	58,439	29,190	29,467	1,059	1,107
West North Central:														
Minnesota	178,478	156,137	6,160	5,619	14,111	12,028	32,743	26,571	65,703	55,424	56,353	52,836	3,318	3,669
Iowa	213,439	217,044	11,521	13,724	13,117	15,678	35,959	38,712	85,549	80,121	63,279	66,165	2,014	2,644
Missouri	263,004	277,244	16,641	19,756	41,116	47,398	67,446	74,178	79,507	80,020	53,961	51,921	4,333	3,971
North Dakota	77,690	74,360	314	229	505	450	917	1,207	11,490	26,008	42,078	34,393	22,386	15,078
South Dakota	74,655	77,644	766	808	993	1,121	2,385	2,406	16,490	25,396	37,354	38,041	16,667	11,872
Nebraska	124,421	129,678	3,361	4,358	3,702	4,558	11,166	12,618	43,159	43,916	47,377	47,233	15,656	16,995
Kansas	165,286	177,841	7,330	8,042	8,277	10,738	20,287	26,151	49,044	57,789	64,047	61,286	16,301	13,835

Digitized by Google

South Atlantic:														
Delaware	10,140	10,836	1,226	1,535	2,182	1,968	2,952	2,977	2,510	2,849	1,218	1,429	52	58
Maryland	47,906	48,923	9,473	10,232	9,003	8,629	10,452	9,946	11,178	11,457	7,344	8,070	458	589
District of Columbia	201	217	127	122	50	65	18	17	5	10	4	3	.....	.....
Virginia	186,242	184,018	36,402	39,746	45,884	42,390	42,714	38,342	34,011	32,997	23,601	26,101	3,630	4,442
West Virginia	87,289	96,685	10,410	15,399	18,155	20,323	25,587	20,806	19,539	20,156	11,990	12,248	1,608	1,753
North Carolina	269,763	253,725	51,336	43,224	87,239	75,629	68,903	62,157	41,082	43,967	19,094	25,254	2,109	3,474
South Carolina	192,693	176,434	40,825	37,985	84,893	70,582	37,530	33,147	18,166	19,427	9,352	12,539	1,927	2,754
Georgia	310,732	291,027	26,969	29,629	134,471	117,432	81,112	68,510	41,183	42,275	22,753	27,710	4,244	5,471
Florida	54,005	50,016	10,558	9,084	19,382	17,169	10,846	9,999	7,637	8,178	4,477	4,545	1,105	1,041
East South Central:														
Kentucky	270,626	259,185	58,965	55,472	63,571	58,537	71,200	65,778	50,991	50,134	23,843	26,639	2,056	2,625
Tennessee	252,774	246,012	44,528	47,341	79,924	72,212	64,940	60,105	41,283	41,545	20,172	22,450	1,927	2,359
Alabama	256,099	262,901	33,741	41,858	112,848	106,841	57,404	55,448	32,500	35,563	16,733	20,093	2,873	3,098
Mississippi	272,101	274,382	65,953	66,943	116,795	112,666	41,900	44,645	28,218	30,172	16,330	17,115	2,905	2,841
West South Central:														
Arkansas	232,604	214,678	35,943	36,259	92,438	74,983	50,619	45,373	36,275	39,353	15,732	17,149	1,597	1,561
Louisiana	135,463	120,546	30,033	29,256	61,346	46,389	21,715	20,248	12,855	13,681	7,472	8,406	2,042	2,566
Oklahoma	191,987	190,192	6,024	7,158	32,558	31,489	43,452	39,002	66,244	75,186	37,652	33,812	6,057	3,545
Texas	436,033	417,770	25,877	29,371	110,383	98,583	119,427	112,237	96,792	94,574	59,572	59,049	23,977	23,956
Mountain:														
Montana	57,677	26,214	930	755	1,279	956	2,141	1,260	8,735	10,552	26,988	8,339	17,604	4,352
Idaho	42,106	30,807	2,917	2,005	6,819	4,048	8,502	5,820	10,565	11,891	10,488	5,866	2,815	1,177
Wyoming	15,748	10,987	196	420	399	338	994	645	2,551	3,816	6,011	3,629	5,597	2,139
Colorado	59,934	46,170	4,932	5,070	4,449	3,882	5,913	4,384	12,139	16,355	21,611	12,476	10,890	4,003
New Mexico	29,844	35,676	6,789	6,885	3,095	2,812	2,008	1,820	4,929	15,363	7,015	7,388	6,008	1,408
Arizona	9,975	9,227	1,436	3,346	2,367	1,477	1,703	820	2,239	2,591	1,351	757	879	236
Utah	25,662	21,676	4,610	4,674	6,549	5,550	5,080	4,170	4,086	3,660	3,867	2,681	1,470	941
Nevada	3,163	2,689	261	271	435	320	555	411	611	555	651	540	650	592
Pacific:														
Washington	66,288	56,192	16,073	10,529	15,255	10,252	9,048	7,105	9,958	13,884	9,637	9,215	6,317	5,207
Oregon	50,206	45,502	7,526	6,030	8,755	6,888	8,302	6,800	9,735	12,009	10,310	9,343	5,578	4,432
California	117,670	88,197	34,067	22,525	31,723	20,614	15,034	10,680	13,217	12,015	13,671	12,551	9,958	9,812

Digitized by Google

AN IMPROVING COUNTRY LIFE.

In 1890, 64.6 per cent of the total population in the United States lived in the country, exclusive of those living in towns and villages with a population of 2,500 or less. In 1900 this per cent was 60.0, in 1910 it was 54.2, and in 1920, 48.6. In the light of such a trend it is obvious that satisfactions in rural life must be increased if we are long to be nationally self-sufficient in agricultural products. Improvement has been made in the facilities in rural districts, but these have not been sufficient to hold the population. Well-being in the country must be enhanced, not by tearing down well-being in the cities, but by increasing the comforts and satisfactions in rural life. This can not be done without increasing purchasing power on our farms, as well as in our towns and cities.

Greater satisfaction and convenience in rural communities means better country roads, better rural schools, rural mail and parcel-post deliveries, telephones and water in country homes, playground facilities, and increasing opportunities for recreation. The automobile with good roads will help make larger rural community centers possible, and hence as choice recreational and social opportunities as smaller cities and most larger cities will offer. A better standard of living in the country should be a cost factor to be reckoned with in future farm prices.

As shown in the following table I–14, forty farms (38.9 per cent) out of 100 now report telephones (1920), and about 1 out of 10 farm homes have water piped into the houses. California, Pennsylvania, New York, Ohio, and Texas lead in the number of farm homes with water piped into farmhouses. The per cent is highest in the New England States and in California. But 7 farm homes out of 100 are now supplied with gas or electricity in the United States as a whole. (See Table I–15, p. 201.)

TABLE I–14.—*Motor vehicles, telephones, water, and light on farms in the United States, 1920.*

Automobiles:	
Farms reporting	1,979,564
Per cent of all farms	30.7
Number of automobiles	2,146,512
Number per 1,000 farms	332.9
Motor trucks:	
Farms reporting	131,551
Per cent of all farms	2.0
Number of motor trucks	139,169
Number per 1,000 farms	21.6
Tractors:	
Farms reporting	229,334
Per cent of all farms	3.6
Number of tractors	246,139
Number per 1,000 farms	38.2
Telephones:	
Farms reporting	2,508,002
Per cent of all farms	38.9
Water piped into house:	
Farms reporting	644,088
Per cent of all farms	10.0
Gas or electric light:	
Farms reporting	452,809
Per cent of all farms	7.0

Digitized by Google

TABLE I–15.—*Motor vehicles, telephones, water, and light on farms in the United States, by geographic divisions and States, 1920.*

Division and State.	Total number of farms.	Automobiles.			Motor trucks.			Tractors.			Farms reporting telephones.		Farms reporting—	
		Farms reporting.		Number of automobiles.	Farms reporting.		Number of motor trucks.	Farms reporting.		Number of tractors.	Number.	Per cent of all farms.	Water piped into house.	Gas or electric light.
		Number.	Per cent of all farms.		Number.	Per cent of all farms.		Number.	Per cent of all farms.					
United States	6,448,366	1,979,564	30.7	2,146,512	131,551	2.0	139,169	229,334	3.6	246,139	2,508,002	38.9	644,088	452,809
Geographic divisions:														
New England	156,564	40,269	25.7	44,754	7,284	4.7	8,119	2,245	1.4	2,397	80,510	51.4	74,954	24,000
Middle Atlantic	425,149	149,599	35.2	164,939	20,472	4.8	22,011	13,240	3.1	14,140	189,344	44.5	98,936	60,102
East North Central	1,084,744	513,052	47.3	550,858	24,942	2.3	26,074	55,413	5.1	58,092	678,937	62.6	134,877	113,439
West North Central	1,096,973	631,631	57.6	693,182	32,331	3.0	33,375	92,123	8.4	97,890	762,442	69.5	107,015	97,847
South Atlantic	1,158,976	187,236	16.2	200,103	14,716	1.3	15,787	10,460	.9	11,254	165,772	14.3	38,964	45,596
East South Central	1,051,600	81,830	7.8	86,141	4,869	.5	5,153	5,046	.5	5,404	202,904	19.3	15,999	21,720
West South Central	996,087	173,609	17.4	184,275	8,960	.9	9,455	17,435	1.8	19,892	273,315	27.4	49,191	19,352
Mountain	244,109	91,698	37.6	98,727	7,168	2.9	7,589	15,865	6.5	17,513	64,166	26.3	26,343	25,161
Pacific	234,164	110,640	47.3	123,533	10,809	4.6	11,606	17,507	7.5	19,557	90,612	38.7	97,809	45,160
New England:														
Maine	48,227	11,686	24.2	12,569	1,061	2.2	1,120	605	1.3	635	23,632	49.0	18,020	4,625
New Hampshire	20,523	4,797	23.4	5,263	663	3.2	717	196	1.0	207	10,166	49.5	10,765	2,322
Vermont	29,075	7,611	26.2	8,172	576	2.0	616	424	1.5	444	16,752	57.6	18,301	3,328
Massachusetts	32,001	8,181	25.6	9,309	3,136	9.8	3,535	540	1.7	592	16,537	51.7	16,893	9,062
Rhode Island	4,083	1,198	29.3	1,395	471	11.5	536	69	1.7	79	1,685	41.3	1,451	700
Connecticut	22,655	6,796	30.0	8,046	1,377	6.1	1,595	411	1.8	440	11,738	51.8	9,594	3,983
Middle Atlantic:														
New York	193,195	68,003	35.2	74,753	8,636	4.5	9,259	7,021	3.6	7,497	91,973	47.6	45,487	24,882
New Jersey	29,702	11,731	39.5	13,695	3,075	10.4	3,380	845	2.8	946	9,484	31.9	7,047	4,551
Pennsylvania	202,252	69,865	34.5	76,491	8,761	4.3	9,372	5,374	2.7	5,697	87,887	43.5	46,402	30,669
East North Central:														
Ohio	256,695	119,511	46.6	128,384	6,960	2.7	7,319	9,934	3.9	10,469	159,478	62.1	41,531	37,745
Indiana	205,125	95,238	46.4	102,122	3,501	1.7	3,671	8,971	4.3	9,230	136,140	66.4	23,476	20,584
Illinois	237,181	125,586	53.0	139,090	5,907	2.5	6,154	21,932	9.3	23,102	173,647	73.2	26,676	23,273
Michigan	196,447	78,919	40.2	82,137	4,681	2.4	4 886	5,584	2.8	5,884	97,874	49.8	29,729	15,695
Wisconsin	189,295	93,798	49.6	98,825	3,893	2.1	4,044	9,092	4.8	9,407	111,793	59.1	13,465	16,574
West North Central:														
Minnesota	178,478	101,847	57.1	107,824	3,677	2.1	3,803	14,794	8.3	15,503	110,568	62.0	11,392	13,539
Iowa	213,439	156,081	73.1	177,558	8,669	4.1	8,910	19,427	9.1	20,270	183,852	86.1	33,851	32,552
Missouri	263,004	81,392	31.0	86,229	4,878	1.9	5,059	7,438	2.8	7,889	163,543	62.2	11,901	14,341
North Dakota	77,690	44,010	56.7	47,711	743	1.0	774	11,834	15.2	13,006	36,349	46.8	4,684	4,518
South Dakota	71,655	51,780	69.4	58,352	4,249	5.7	4,353	12,160	16.3	12,939	44,327	59.4	9,157	6,445
Nebraska	124,421	94,004	75.6	104,453	6,333	5.1	6,548	10,342	8.3	11,106	95,050	76.4	20,691	12,062
Kansas	165,286	102,517	62.0	111,055	3,782	2.3	3,928	16,128	9.8	17,177	128,753	77.9	15,339	14,390

Digitized by Google

TABLE I-15.—*Motor vehicles, telephones, water, and light on farms in the United States, by geographic divisions and States, 1920*—Continued.

Division and State.	Total number of farms.	Automobiles.			Motor trucks.			Tractors.			Farms reporting telephones.		Farms reporting—	
		Farms reporting.		Number of automobiles.	Farms reporting.		Number of motor trucks.	Farms reporting.		Number of tractors.	Number.	Per cent of all farms.	Water piped into house.	Gas or electric light.
		Number.	Per cent of all farms.		Number.	Per cent of all farms.		Number.	Per cent of all farms.					
South Atlantic:														
Delaware	10,140	3,693	36.4	4,014	283	2.8	304	220	2.2	239	2,763	27.3	752	397
Maryland	47,908	16,049	33.5	17,702	2,556	5.3	2,805	1,410	2.9	1,525	11,755	24.5	6,702	3,330
District of Columbia	204	50	24.5	58	29	14.2	29	1	0.5	1	67	32.8	51	52
Virginia	186,242	28,557	15.3	30,959	2,389	1.3	2,544	2,206	1.2	2,379	33,482	18.0	9,474	7,574
West Virginia	87,289	10,405	11.9	11,127	886	1.0	936	541	0.6	572	37,789	43.3	4,974	12,900
North Carolina	269,763	41,589	15.5	44,207	2,551	1.0	2,671	2,184	0.8	2,277	33,218	12.3	4,612	8,005
South Carolina	192,693	30,709	15.9	32,312	1,609	0.8	1,736	1,213	0.6	1,304	10,943	5.7	3,443	5,170
Georgia	310,732	47,173	15.2	49,841	2,913	0.9	3,145	2,063	0.7	2,252	31,231	10.1	5,615	5,896
Florida	54,005	8,761	16.2	9,383	1,500	2.8	1,617	602	1.1	705	4,524	8.4	3,341	2,042
East South Central:														
Kentucky	270,626	28,532	10.5	30,146	1,455	0.5	1,538	1,913	0.7	2,029	73,145	27.0	5,139	5,925
Tennessee	252,774	22,446	8.9	23,550	1,362	0.5	1,430	1,796	0.7	1,872	66,880	22.5	4,890	4,554
Alabama	266,099	15,906	6.2	16,892	1,114	0.4	1,180	739	0.3	836	44,619	17.4	2,987	3,345
Mississippi	272,101	14,946	5.5	15,853	988	0.3	1,005	598	0.2	667	28,260	10.4	2,983	2,906
West South Central:														
Arkansas	232,604	15,401	6.6	16,408	973	0.4	1,027	1,423	0.6	1,822	52,869	22.7	1,780	2,643
Louisiana	135,463	9,494	7.0	10,512	793	0.6	874	2,142	1.6	2,812	8,599	6.4	2,185	1,471
Oklahoma	191,987	49,017	25.5	52,063	2,070	1.1	2,155	5,780	3.0	6,210	71,613	37.3	6,646	7,010
Texas	436,033	99,097	22.9	105,292	5,124	1.2	5,399	8,084	1.9	9,048	140,234	32.2	38,580	8,228
Mountain:														
Montana	57,677	20,749	36.0	22,072	1,167	2.0	1,225	6,890	12.0	7,647	9,781	17.0	3,055	2,013
Idaho	42,106	16,651	39.6	17,646	779	1.9	837	1,468	3.5	1,587	13,837	32.9	5,240	5,982
Wyoming	15,748	6,180	39.2	6,705	554	3.5	591	969	6.2	1,075	4,449	28.3	1,035	717
Colorado	59,234	28,356	47.3	30,830	2,884	4.8	3,016	4,526	7.6	4,990	23,685	39.5	6,806	3,925
New Mexico	29,814	5,546	18.6	6,018	552	1.9	593	457	1.5	491	3,359	11.3	1,460	422
Arizona	9,975	4,534	45.5	5,082	527	5.3	581	820	8.2	930	1,638	16.4	1,988	592
Utah	25,662	8,246	32.1	8,657	544	2.1	572	558	2.2	583	6,295	24.5	6,179	11,125
Nevada	3,163	1,436	45.4	1,717	161	5.1	174	182	5.8	210	1,122	35.5	580	385
Pacific:														
Washington	66,288	27,626	41.7	29,792	3,172	4.8	3,371	2,474	3.7	2,635	27,952	42.2	18,987	9,178
Oregon	50,206	20,561	41.0	22,223	1,728	3.4	1,819	2,902	5.8	3,070	25,351	50.5	12,914	5,463
California	117,670	62,453	53.1	71,518	5,909	5.0	6,416	12,131	10.3	13,852	37,309	31.7	65,928	30,519

Digitized by Google

INCREASING SCIENCE IN FARMING.

Agriculture is subject to numerous hazards which can be only partially controlled. These hazards are mainly responsible for wide variations in yield, which make figures of cost of production of farm crops of very doubtful reliability, and makes farming a gamble of enormous proportions. Wide variations in yield in relation to acreage are illustrated in the table which follows.

TABLE I-16.—*Production and acreage of specified farm crops, 1919 and 1909.*

PRODUCTION.

	1919	1909	Increase.	Per cent increase.
Corn	2,355,593,173	2,552,189,630	−196,596,457	− 7.7
Wheat	951,331,017	683,379,259	267,951,758	39.1
Oats	1,055,095,513	1,007,142,980	47,952,533	4.8
Barley	122,060,377	173,344,212	− 51,283,835	−29.6
Rye	75,774,308	29,520,457	46,253,851	156.7
Buckwheat	12,735,537	14,849,332	− 2,113,795	−14.2
Potatoes (Irish)	290,754,580	389,194,965	− 98,440,385	−25.3
Peanuts	27,449,030	19,415,816	8,034,114	41.4
Hay	90,469,213	87,216,351	3,252,862	3.7
Peaches	51,551,251	35,470,276	16,080,975	45.3
Apples	136,746,154	145,412,318	− 8,666,164	− 6.0

ACREAGE.

Corn	87,666,910	98,382,665	−10,715,755	−10.9
Wheat	73,156,967	44,262,592	28,894,375	65.3
Oats	37,842,925	35,159,441	2,683,484	7.6
Barley	6,474,462	7,698,706	− 1,224,244	−15.9
Rye	7,682,708	2,195,561	5,487,147	249.9
Buckwheat	746,306	878,048	− 131,742	−15.0
Potatoes (Irish)	3,258,192	3,668,855	− 410,663	−11.2
Peanuts	1,125,100	869,887	255,213	29.3
Hay	72,824,890	68,227,310	4,597,580	6.7
Peaches	[1] 65,654,921	94,506,657	−28,851,736	−30.5
Apples	[1] 115,265,029	151,322,840	−36,057,811	−23.8

[1] Number of trees of bearing age.

These wide variations can, of course, not be accounted for on the basis of variation in farming methods. They must be accounted for on the basis of hazards which the farmer can not control. These hazards include weather, insect pests, plant and animal diseases. Some of these hazards can be covered by insurance, others can be partially controlled by methods of cultivation and other means of control.

Great progress has been made by agricultural colleges, and by the National and State departments of agriculture, in working out means of controlling the hazards to which agriculture is subject. Losses from these sources have been greatly diminished. Effective application of methods of controlling insect pests and plant and animal diseases depend in large measure, however, upon appropriate farm organizations. Campaigns for the control or eradication of insect pests and plant and animal diseases depend for success largely upon effective organization of the farmers in the afflicted communities. Where these farmers are already organized in effective farm units, the work of control or eradication is rendered much easier, particularly where the campaign involves modifications of cultural methods or general

Digitized by Google

changes in the kind or strains of crops to be planted or animals to be produced.

On the whole, it seems probable that increased production of farm products in this country must be at the expense of increased costs. There is nothing in the study of the development of agriculture for the past 30 years which justifies a conclusion that greatly increased fixed charges resulting from higher land values, greater indebtedness, larger outlay for equipment and machinery, fertilizer, labor, and greater satisfactions and conveniences in country life, can be paid for out of either increased production per man or per acre. Payment of these increased costs must come out of larger money returns, and these are dependent for the most part upon better organization and more efficient marketing of farm crops.

Digitized by Google

CHAPTER X.

FARM MORTGAGES.

The total amount of mortgages on farm lands and buildings owned by their operators and farmed without renting additional lands increased from $1,726,172,851 in 1910 to $4,012,711,215 in 1920, an increase of 132.5 per cent, according to United States Census Bureau figures. The ratio of the total mortgage debt to the value of these lands and buildings increased from 27.3 per cent in 1910 to 29.1 per cent in 1920. The amount of mortgage debt on such farms in 1890 was $1,085,995,960, or just about one-fourth what it was in 1920.

These are the totals for the farms operated in their entirety by their owners. Assuming that all other farms are mortgaged at the same rate, the total mortgage debt in 1910 would have been $3,598,825,000 and in 1920 about $8,663,000,000.

THE INCREASE IN OWNED FARMS MORTGAGED.

The per cent of owned farms mortgaged increased from 33.6 per cent of all farms in 1910 to 41.3 per cent in 1920, and all the States but two show increases. The two States showing decreases are Mississippi and Delaware. The number of all farms in Mississippi decreased from 1910 to 1920, the number of colored farmers markedly decreased, and the average value of land and buildings per acre went up from $18.01 to $43.36 per acre in the decade, as compared with an increase of $39.60 to $70.94 in the United States as a whole. The number of farms in Delaware declined during the decade, as did the average acreage per farm. Delaware is situated in a particularly profitable truck and fruit growing region.

The per cent of owned farms mortgaged has increased from 28.2 per cent in 1890 and 31 per cent in 1900 to 33.6 per cent and 41.3 per cent in 1910 and 1920, respectively.

Half the States show an increase of 24 per cent or more in the number of owned farms mortgaged in the last 10 years, as shown by the Table J–1.

TABLE J–1.—*The per cent of increase or decrease in the number of owned farms mortgaged 1910–1920, by States.*

State.	Per cent.	State.	Per cent.
Decreased:		Increased—Continued.	
Mississippi	5.4	Minnesota	21.6
Delaware	1.8	Louisiana	24.0
Increased:		Virginia	24.0
New Jersey	1.2	West Virginia	30.0
Maryland	1.3	Kentucky	31.5
North Carolina	4.0	California	35.8
South Carolina	4.0	Oklahoma	38.8
Indiana	6.4	Georgia	39.0
New York	7.0	Tennessee	39.0
Vermont	7.0	Nebraska	43.6
Michigan	7.6	Washington	43.7
Illinois	8.7	Oregon	47.3
Ohio	9.6	North Dakota	49.0
Rhode Island	9.8	Arkansas	60.7
Pennsylvania	9.9	Florida	65.0
Missouri	10.1	South Dakota	65.9
Connecticut	11.5	Idaho	88.0
Maine	12.0	Colorado	90.1
Alabama	12.2	District of Columbia	92.0
Iowa	14.0	Utah	109.6
Massachusetts	15.6	Nevada	113.0
Kansas	15.6	Wyoming	126.9
Texas	19.2	Montana	206.1
Wisconsin	20.8	Arizona	270.0
New Hampshire	21.0	New Mexico	405.0

Digitized by Google

Table J–2 gives the per cent of owned farms mortgaged in each State and geographic division from 1890 to 1920. The States are arranged in order of the per cent of mortgages in 1920. It will be noted—

1. In one-third of the States from 16 to 32 per cent of the owned farms are mortgaged, in one-third of the States from 34 to 49 per cent of the owned farms are mortgaged, and in one-third of the States one-half or more of the owned farms are mortgaged.

2. Of the States in which half or more of the owned farms are mortgaged all but three are west of the Mississippi River.

3. The per cent of all owned farms mortgaged has increased from 28.2 per cent in 1890 to 41.3 per cent in 1920.

4. All the geographical divisions show increases in owned farms mortgaged. For the United States as a whole there was an increase of 46 per cent in owned farms mortgaged from 1890 to 1920, as contrasted with 11 per cent in the Middle Atlantic States, with 19 per cent in the west North Central States, 22 per cent in the east North Central States, 41 per cent in New England, 81 per cent in the Pacific States, 203 per cent in the South Atlantic States, and 498 per cent in the east South Central States (Arkansas, Louisiana, Oklahoma, and Texas). In other words, where few farms were mortgaged 30 years ago many are mortgaged now.

TABLE J–2.—*Per cent of owned farms mortgaged, by States and divisions, 1890–1920.*

States and divisions.	1920	1910	1900	1890
United States	41.3	33.6	31.1	28.2
Geographical divisions:				
New England	39.8	34.9	34.1	28.2
Middle Atlantic	41.1	38.3	40.3	37.0
East North Central	46.0	40.9	39.4	37.6
West North Central	56.9	46.1	44.3	48.0
South Atlantic	22.4	18.8	16.8	7.4
East South Central	26.9	22.7	17.0	4.5
West South Central	40.6	30.6	18.2	4.8
Mountain	52.2	20.8	14.4	14.1
Pacific	52.1	36.8	27.6	28.7
States:				
West Virginia	16.3	12.6	14.1	13.0
North Carolina	19.2	18.5	15.8	4.9
Virginia	19.8	16.0	14.7	3.2
Tennessee	23.5	16.9	11.5	3.2
Florida	24.5	14.8	10.3	2.9
Louisiana	24.7	19.0	17.7	4.0
South Carolina	25.0	24.0	20.6	8.0
Kentucky	25.8	19.6	15.2	4.1
Georgia	26.5	19.0	14.7	3.4
New Mexico	27.3	5.4	2.8	3.0
Maine	29.8	26.6	26.7	22.1
Alabama	30.2	26.9	19.2	4.4
New Hampshire	31.0	25.6	25.5	21.8
Mississippi	31.1	32.9	27.1	7.7
Ohio	31.6	28.9	29.8	28.9
Rhode Island	32.5	29.6	27.1	19.1
Pennsylvania	34.1	31.1	32.3	27.4
Arkansas	34.4	21.4	14.3	4.2
District of Columbia	35.4	18.4	18.9	4.1
States—Continued.				
Nevada	35.6	16.7	19.3	17.2
Delaware	36.5	37.2	36.5	29.4
Maryland	37.0	36.5	36.8	30.0
Texas	39.7	33.3	23.4	5.7
Indiana	41.3	38.8	36.5	33.1
Illinois	42.6	39.2	39.3	36.7
Wyoming	44.7	19.7	12.2	13.1
New York	46.9	43.7	46.3	44.2
Massachusetts	47.3	40.9	38.6	30.5
Arizona	47.7	12.9	6.0	6.8
Utah	48.0	22.9	11.1	5.5
Connecticut	48.3	43.2	40.7	31.1
Washington	49.0	34.1	21.7	26.8
Oregon	49.7	33.7	25.2	23.4
Colorado	50.2	26.4	27.0	25.5
New Jersey	50.2	49.6	51.9	48.9
Vermont	50.2	46.9	46.9	44.3
Missouri	51.0	46.3	42.4	36.4
Kansas	51.8	44.8	41.8	55.5
Michigan	51.9	48.2	48.3	49.4
California	55.0	40.5	32.2	32.5
Minnesota	56.3	46.3	44.8	46.4
Nebraska	56.5	39.4	45.4	52.0
Iowa	59.1	51.8	53.0	53.3
Oklahoma	60.4	62.5	9.2	.....
Wisconsin	62.0	51.4	45.8	42.9
Idaho	62.8	33.4	16.4	16.3
South Dakota	63.1	38.2	36.7	52.4
Montana	64.6	21.1	14.0	15.6
North Dakota	75.9	50.9	31.4	48.7

LAND AND CROP VALUES.

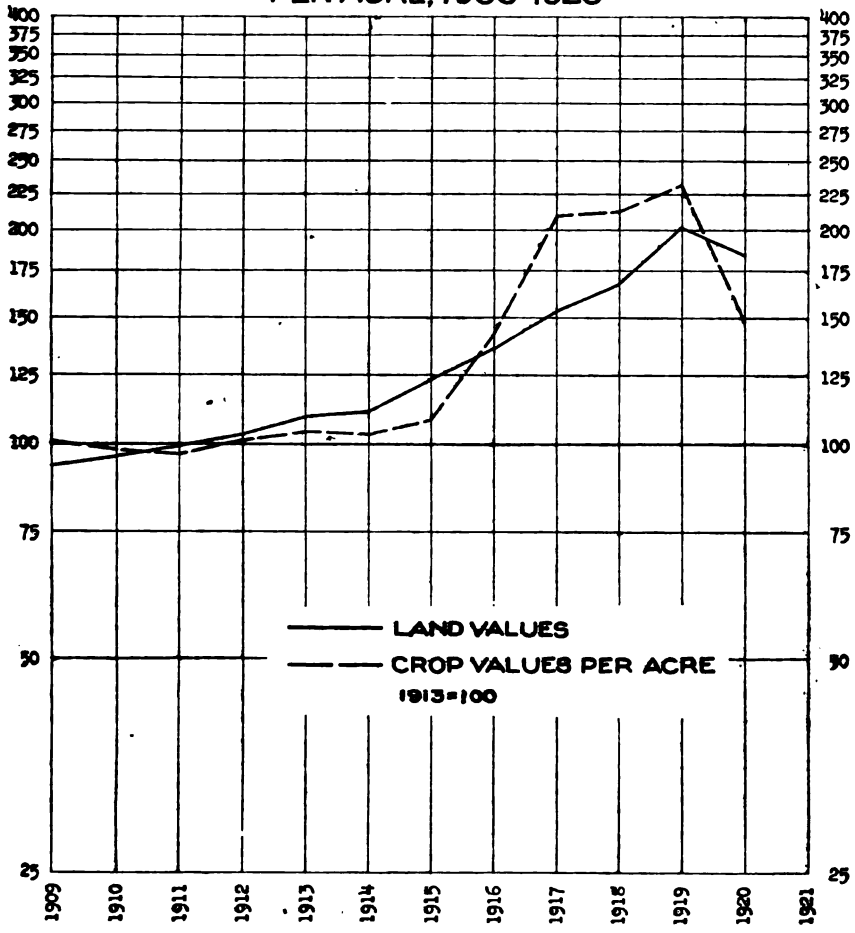
For the United States as a whole land values increased slightly more rapidly than did the value of crop yields per acre from 1909 to 1915, but land values lagged well behind crop values from 1916 to 1919 and were above crop values in 1920. Moreover, land values for the United States as a whole, in 1920, were about 50 per cent above

Digitized by Google

the average land values per acre in 1913, yet crop values per acre in 1921 are about back to a 1913 level. This represents a serious element in the farm-mortgage situation at the present time, as is indicated by chart J–1.

CHART J–1.

INDEX NUMBERS OF LAND VALUES AND CROP VALUES PER ACRE, 1909-1920



INTEREST RATE ON MORTGAGES.

The average rate of interest paid on mortgages on land in early 1920, as given in the census returns, was 6.1 per cent. This rate was lowest in the Middle Atlantic (5.4 per cent) and New England (5.7 per cent) States, and highest in the west South Central (7.2 per cent) and Mountain (7.3 per cent) States. (See Table J–3, p. 208.)

Half the States paid an interest rate equal to or above the average per cent paid in the United States, and of these States 16 in number are west of the Mississippi River, 7 in the South, and 1 only (Maine) in the East.

Digitized by Google

TABLE J-3.—*Average interest rate paid on farm mortgages, in 1920, by States and by divisions and by the United States.*[1]

[From preliminary report of fourteenth census.]

States and divisions.	Rate of per cent.	States and divisions.	Rate of per cent.
United States	6.1	States—Continued.	
Geographical divisions:		West Virginia	5.9
New England	5.7	Michigan	6.0
Middle Atlantic	5.4	Kansas	6.0
East North Central	5.6	Virginia	6.0
West North Central	5.8	North Carolina	6.0
South Atlantic	6.4	Kentucky	6.0
East South Central	6.4	Maine	6.1
West South Central	7.2	Missouri	6.1
Mountain	7.3	Tennessee	6.2
Pacific	6.6	Oregon	6.5
States:		Mississippi	6.5
New Hampshire	5.1	California	6.6
Pennsylvania	5.3	Oklahoma	6.6
Wisconsin	5.3	Washington	6.6
Vermont	5.4	Nevada	6.7
New York	5.4	North Dakota	6.7
New Jersey	5.4	Colorado	6.8
Illinois	5.5	Utah	7.1
Iowa	5.5	Louisiana	7.2
Maryland	5.6	Texas	7.2
Delaware	5.7	South Carolina	7.3
Nebraska	5.7	Georgia	7.3
Connecticut	5.7	Florida	7.3
Massachusetts	5.7	Idaho	7.3
Rhode Island	5.8	New Mexico	7.3
Indiana	5.8	Alabama	7.5
Minnesota	5.8	Arizona	7.5
District of Columbia	5.8	Montana	7.6
Ohio	5.9	Wyoming	7.6
South Dakota	5.9	Arkansas	7.8

[1] Interest rates represent rates stated in the mortgage and do not include commission or other charges.

FARM CREDITS RELATED TO DIVERSIFIED FARMING.

The table below gives for recent years the receipts from the sale of (1) live stock, (2) live-stock products, (3) crops, and (4) miscellaneous products, out of every $100 received from all farm sales, by States, and for the United States as a whole. Out of $100 received from the sale of farm products in the United States as a whole, $40 came from crops, $36 from live stock, and $20 from live-stock products.

TABLE J-4.—*Receipts from the sale of (1) live stock, (2) live-stock products, (3) crops, (4) miscellaneous, out of every $100 received from all sales, average of recent years.*

[From tabulation of reports from crop correspondents of the Bureau of Crop Estimates.]

State.	Live stock.	Live-stock products.	Crops.	Miscellaneous.	State.	Live stock.	Live-stock products.	Crops.	Miscellaneous.
Maine	$15	$42	$35	$8	Minnesota	$33	$20	$43	$4
New Hampshire	20	51	25	4	Iowa	63	12	22	3
Vermont	18	64	10	8	Missouri	62	13	21	4
Massachusetts	19	50	27	5	North Dakota	25	6	66	3
Rhode Island	13	62	22	1	South Dakota	41	18	36	5
Connecticut	12	62	24	2	Nebraska	56	9	32	3
New York	14	53	27	6	Kansas	39	16	42	3
New Jersey	6	26	62	6	Kentucky	45	19	31	5
Pennsylvania	21	42	32	5	Tennessee	42	12	40	6
Maryland and Delaware	23	32	42	3	Alabama	17	14	66	3
Virginia	46	15	35	4	Mississippi	12	8	76	4
West Virginia	58	23	13	6	Louisiana	13	9	72	6
North Carolina	18	15	60	7	Texas	16	9	72	3
South Carolina	8	12	72	8	Oklahoma	32	11	53	4
Georgia	14	8	75	3	Arkansas	34	11	48	7
Florida	16	16	64	4	Mountain States[1]	49	13	34	4
Ohio	41	22	31	6	Washington	16	46	36	2
Indiana	50	16	30	4	Oregon	33	32	30	5
Illinois	42	20	35	3	California	15	12	72	14
Michigan	34	30	31	5					
Wisconsin	31	47	17	5	United States	36	20	40	4

[1] Including Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, and Idaho.

Source: United States Department of Agriculture, Yearbook, 1920, page 815. Correspondents were requested to give their 1914 sales if that year was representative; if 1914 sales were not normal, they were to give figures which were typical of sales in recent years. Unfortunately eight Mountain States are lumped together as one State.

Digitized by Google

The average receipts from the sale of crops per farm for the United States as a whole in recent years is about $40 per year out of each $100 of total sales. The table below gives the per cent of tenancy, the per cent of owned farms mortgaged, and the interest rate on mortgages for each State in which farmers receive $60 or more per acre for crops. It will be noticed that the per cent of tenancy, the per cent of owned farms mortgaged, and the interest rate on mortgages all are high in these States. This method brings out the cotton States, North Dakota as a wheat State, California as a fruit State, and New Jersey as a trucking State. Of these, New Jersey, with a low mortgage rate, has a low per cent of tenancy.

TABLE J-5.—*The per cent of farms operated by tenants, the per cent of owned farms mortgaged, and the interest rate on mortgages in States in which farmers receive $60 or more out of each $100 from the sale of farm crops.*

States.	Tenancy.	Mortgages.	Interest on mortgages.	Amount received from crops out of $100 sales.
	Per cent.			
New Jersey	23	50.2	5.4	$62
North Carolina	43.5	19.2	6	60
South Carolina	64.9	25	7.3	72
Georgia	66.6	26.5	7.3	75
Florida	25.3	24.5	7.3	64
North Dakota	25.6	75.9	6.7	66
Alabama	57.9	30.2	7.5	66
Mississippi	66.1	31.1	6.5	76
Louisiana	57	24.7	7.2	72
Texas	53.3	39.7	7.2	72
California	57.1	55	6.6	72
Average for these States	49.1	36.5	6.8	.....
Average for United States	38.1	41.3	6.1	.....

In the next table we compare the same items in those States in which farmers received from the sale of live stock $54 or more out of each $100 in sales. These are not the States producing most live stock in quantity, but the most in proportion to the agricultural output of the State. The per cent of tenancy runs not quite as high in these States as in the leading crop States, but the per cent of owned farms mortgaged is higher and the interest on mortgages is below, or not in excess of, the average for the United States.

TABLE J-6.—*The per cent of farms operated by tenants, the per cent of owned farms mortgaged, and the interest rate on mortgages in States in which farmers receive from live stock $54 or more out of each $100 of farm sales.*

States.	Per cent of all farms operated by tenants.	Per cent of owned farms mortgaged.	Interest rate on mortgages (1920).	Amount received for live stock out of each $100 sales.
West Virginia	16.2	16.3	5.9	$58
Iowa	41.7	59.1	5.5	63
Missouri	28.8	51.0	6.1	62
Nebraska	42.9	56.5	5.7	56

Digitized by Google

Of these States, however, West Virginia ranks thirty-fifth among the States in the value of live stock. If we take the 10 States leading in the value of all live stock, we find that the percentage of tenancy is below, the per cent of owned farms mortgaged above, and the rate of interest a little below the average for the United States as a whole. If, however, we exclude from these 10 States both New York and Wisconsin as dairy States, discussed in the next table, we have a degree of tenancy and of mortgages above that prevailing in the country as a whole, with the interest rate on mortgages about the same. These live-stock States, however, are above the "crop States" in owned farms mortgaged, with a decidedly lower interest rate on mortgages, and hence a much lower per cent of tenancy.

TABLE J–7.—*The per cent of farms operated by tenants, the per cent of owned farms mortgaged, and the interest rate on mortgages in the 10 leading live-stock States, 1920.*

[Yearbook of United States Department of Agriculture, 1920, p. 757.]

States.	Per cent of farms operated by tenants.	Per cent of owned farms mortgaged.	Interest rate on mortgages.	Amount received from live stock out of $100 sales.
Iowa	41.7	59.1	5.5	$63.00
Texas	55.3	39.7	7.2	16.00
Illinois	42.7	42.6	5.5	42.00
Missouri	28.8	51.0	6.1	62.00
Wisconsin	14.4	62.0	5.3	31.00
Ohio	29.3	31.6	5.9	41.00
Nebraska	42.9	56.5	5.7	56.00
Kansas	40.4	51.8	6.0	39.00
Minnesota	24.7	56.3	5.8	33.00
New York	19.2	46.9	5.4	14.00
Average for these States	33.7	49.75	5.84	39.70
Average for United States	38.1	41.3	6.1	36.00
Average for 8 States, excluding New York and Wisconsin	40.0	48.6	6.0	44.00

Table 28 page 211 gives the same data for States in which farmers receive 50 per cent or more ($30 or more out of each $100) than the average farmer in the country receives from the sale of live-stock products, such as milk and butter and eggs. These, as a rule, are the States with diversified farming, in which the roughage of the farms and much of the crops are fed to dairy cows. In these States the per cent of tenancy is less than half what it is throughout the United States; the per cent of owned farms mortgaged is slightly above and the interest rate on mortgages is considerably lower than in the above States, and much lower than the average for the country as a whole. In these 13 States, 17.6 per cent of all farms were operated by tenants, as compared with 38.1 per cent in the country as a whole; 44.3 per cent of owned farms were mortgaged, as compared with 41.3 per cent in the country as a whole; and the interest rate on mortgages in 1920 was 5.7 per cent, as compared with 6.1 per cent in the country as a whole. Dairy products particularly bring the farmer a steady cash income throughout the year, hence the need for borrowing is not so great and the security is better, and farmers have better credit opportunities for owning their own farms, and hence tenancy is lower.

Digitized by Google

TABLE J–8.—*The per cent of farms operated by tenants, the per cent of owned farms mortgaged, and the interest rate on mortgages in States in which farmers receive $30 or more out of each $100 on farm sales from the sale of live-stock products.*

States.	Per cent of tenancy.	Per cent of owned farms mortgaged.	Interest on mortgages.	Amount received from live-stock products per $100 sales.
New Hampshire	6.7	31.0	5.1	$51.00
Vermont	11.6	50.2	5.4	64.00
Massachusetts	7.1	47.3	5.7	50.00
Rhode Island	15.5	32.5	5.8	62.60
Connecticut	8.5	48.3	5.7	62.00
New York	19.2	46.9	5.4	53.00
Pennsylvania	21.9	34.1	5.3	42.00
Michigan	17.7	51.9	6.0	30.60
Wisconsin	14.4	62.0	5.3	47.60
Washington	18.7	49.0	6.6	46.00
Oregon	18.8	49.7	6.5	32.00
Maryland	28.9	37.0	5.6	32.00
Delaware	39.3	36.5	5.7	32.00
Average for these States	17.6	44.3	5.7	46.40
Average for United States	38.1	41.3	6.1	20.00

Those with money to loan consider many factors in estimating the element of risk, and hence the interest rate on loans. The careful investor will inquire whether land values are too far above crop values per acre. He will inquire whether there is a single crop on which price and yield risk may be high, or whether there are diversified crops to lower risks in price and in yields. The risk is higher in semiarid regions, and a loan near at home where all the factors can be weighed will be preferred to a loan in a region unknown to the investor. Soil and contour and community and family habits of thrift are all considered. And not least in importance are marketing opportunities and facilities. Cooperative marketing gives a strong base for a properly organized local credit system.

BUYING FARMS WITH LAND BANK LOANS.[1]

A special study has been made by the Federal Department of Agriculture as to the extent to which land bank loans have been used for the purchase of farms. About 13 per cent only of the loans made by Federal land banks from the time of their organization up to November 30, 1919, were used for the purpose of purchasing farm lands. It appears that in the year 1918 (ending Nov. 30) but 8 per cent of the loans were used in buying lands. In October of 1919, 16 per cent of the loans made by the Federal land banks were for the purchase of lands. It is evident, therefore, that these loans are more and more being used as an aid to farm ownership. Out of a total of $251,426,600 of loans made by these banks up to November of 1919, 59 per cent was used to liquidate existing mortgages.

About two-thirds of those who borrowed from Federal land banks to purchase land were already owners of farm lands. Of the total number of borrowers 23 per cent were landless tenants, and of the landless borrowers about two-thirds were operating as tenants at

[1] Bulletin 968, U. S. Department of Agriculture.

Digitized by Google

the time of borrowing. The relative size of Federal loans obtained for different tenure groups was as follows:

TABLE J-9.—*Relative size of Federal farm loan obtained for different tenure groups.*

Tenure group.	Number of farms.	Average per cent Federal farm loan is of the cost of the farm purchased.	Average cost of farm purchased.	Average size of the Federal land bank mortgages.
Nonowning buyers	558	44.2	$8,072	$3,55
Owner buyers, including tenant owners	610	41.5	9,652	4,00
Total	1,168			
Nonowning tenants	406	44.1	8,224	3,63
Owning tenants	133	42.4	9,620	4,07

The costs incurred in obtaining Federal farm loans was about 1.43 per cent of the average loan.

TABLE J-10.—*Costs incurred in obtaining Federal farm loans (analysis and averages of 1,765 reports).*

Size of average loan	$3,541.00
Average cost of securing the Federal farm loan	$50.84
Per cent which the average cost of securing the loan is to the loan	1.43

The Federal land banks have aided in extending farm ownership, and they no doubt afford more favorable conditions for the purchase of farms by those having but a small proportion of the purchase price than prevailed before the development of the Federal land bank system, particularly because the system makes it more practicable to lend on second mortgages than did the usual private arrangements.

America wants more farm owners and fewer tenants. This will be brought about by two means—price and credit. Constructive suggestions for better price policies and for better credit facilities are made elsewhere in this report.

Digitized by Google

CHAPTER XI.

FARM TENANCY.

Americans have taken great pride in the large number of our farms operated by their owners, as compared with the number in other countries. Is the number of farms run by their owners increasing or decreasing? What has been the trend toward tenancy in this country?

As shown in the following table, K–1, the total number of farms in the United States increased 1.4 per cent from 1910 (6,361,502) to 1920 (6,448,366), as contrasted with an increase of 14.6 per cent in the total population during this period. The number of farms operated by owners declined six-tenths of 1 per cent during the past decade, while the number operated by managers increased 17.9 per cent, and by tenants 4.2 per cent. But 60.9 per cent of our farms were run by their owners in 1920, as compared with 62.1 per cent in 1910 and 74.4 per cent in 1880. During this period the number of farms operated by tenants increased from 37 per cent to 38.1 per cent of the total, and by managers from 0.9 per cent to 1.1 per cent of all farms. In 1920 we had 86,864 more farms in the United States than in 1910, but 100,000 more farms were operated by tenants in 1920 than in 1910.

The number of farms operated by tenants in 1910 was 2,354,676; in 1920 the number was 2,454,746, an increase of 4.2 per cent. The number of farms operated by tenants in 1900 was 2,024,964, as compared with 2,354,676 in 1910, an increase of 16.3 per cent in that decade.

TABLE K-1.—*Farms in the United States, classified by tenure, 1920 and 1910.*[1]

	Number of farms.		Increase.[2]	
	1920	1910	Number.	Per cent.
Total	6,448,366	6,361,502	86,864	1.4
Owners	3,925,090	3,948,722	− 23,632	− 0.6
Managers	68,530	58,104	10,426	17.9
Tenants	2,454,746	2,354,676	100,070	4.2
Share tenants	1,117,730	1,399,923	278,812	19.9
Croppers[3]	561,005			
Share-cash tenants	127,834	128,466	− 632	− 0.5
Cash tenants	480,027	712,294	−127,280	−17.9
Standing renters[3]	104,987			
Unspecified	63,163	113,993	− 50,830	−44.6
Per cent of total:				
Owners	60.9	62.1		
Managers	1.1	0.9		
Tenants	38.1	37.0		

[1] From the Census Bureau. [2] A minus sign (−) denotes decrease. [3] In Southern States only.

Digitized by Google

The proportion of tenancy has steadily increased from 25.6 per cent of all farms in the United States in 1880 to 38 per cent in 1920. The relative increase was least in the last decade, though this past year has no doubt seen a distinct increase in tenancy over the pre-war years. Our greatest increase in tenantry came during the hard years of the nineties, as follows:

TABLE K-2.—*Proportion of farms in the United States operated by tenants, 1880–1920.*

	1880	1890	1900	1910	1920
Operated by tenants	25.6	28.4	35.3	37	38
Operated by owners and managers	74.4	71.6	64.7	63	62

As indicated by the following table K-3 the total farm acreage in the United States increased from 878,798,325 acres in 1910, to 955,676,545 acres in 1920, an increase of 8.7 per cent, as contrasted with an increase of 14.5 per cent in population. The number of acres farmed by tenants increased 17.1 per cent from 1910 to 1920, more rapidly than total acreage or the number of farms occupied by tenants, and more rapidly than the general increase in size of farms in the United States in that period.

TABLE K-3.—*Farm acreage in the United States, by tenure, 1920 and 1910.*[1]

	Jan. 1, 1920.	Apr. 15, 1910.
Total farm acreage	955,676,545	878,798,325
Acreage operated by—		
Owners	636,508,324	598,554,617
Full owners[1]	461,112,031	464,928,315
Part owners	175,396,293	133,631,302
Managers	53,974,906	53,780,865
Tenants	265,193,415	226,512,843
Average acreage per farm:		
All farms	148.2	138.1
Farms operated by—		
Owners	162.2	151.6
Full owners[1]	137.0	138.6
Part owners	314.0	225.0
Managers	787.7	924.7
Tenants	108.0	96.2

[1] From the Census Bureau.

As shown in the table, K-4, p. 215, the average acreage of land per farm for all farmers in 1920 was 148.2, as contrasted with 138.1 in 1910. The average acreage of land per farm, operated by owners, in 1920 was 162.2; in 1910, 151.6. The average acreage per farm operated by tenants was 108 in 1920, in 1910, 96.2 acres. The per cent increase in acreage per farm for this decade for each class was, for all farmers, 7.3 per cent; for owners, 6.9 per cent; for tenants, 12.2 per cent.

From 1900 to 1910 the average acreage per farm decreased 5.5 per cent, whereas the acreage per farm operated by tenants decreased but one-tenth of 1 per cent. In this decade the per cent of improved acreage per farm increased 4.2 per cent, while that occupied by tenants increased 7.3 per cent.

Digitized by Google

TABLE K-4.—*Average acreage per farm and percentage of farm land improved, by tenure of operator: 1910 and 1900.*[1]

Class of operator.	Average acreage per farm.				Average improved acreage per farm.				Per cent of farm land improved.	
	1910	1900	Increase.[2]		1910	1900	Increase.		1910	1900
			Amount.	Per cent.			Amount	Per cent.		
All classes	138.1	146.2	— 8.1	— 5.5	75.2	72.2	3.0	4.2	54.4	49.4
Farms operated by—										
Owners	151.6	152.2	— .6	— .4	78.5	76.2	2.3	3.0	51.8	50.0
Owning entire farm	138.6	134.7	2.9	2.9	69.7	69.2	.5	.7	50.3	51.4
Renting additional land	225.0	276.4	— 51.4	—18.6	128.1	125.7	2.4	1.9	56.9	45.5
Managers	924.7	1,481.2	—556.5	—37.6	211.9	184.6	27.3	14.8	22.9	12.5
Tenants	96.2	96.3	— .1	— .1	66.4	61.9	4.5	7.3	69.0	64.3
Share and share—cash	93.2	92.4	.8	.9	69.1	65.0	4.1	6.3	74.2	70.3
Share	87.9	.....	.....	.....	64.1	.....	.....	.....	72.9	.....
Share—cash	150.9	.....	.....	.....	124.0	.....	.....	.....	82.1	.....
Cash and unspecified	101.7	102.9	— 1.2	— 1.2	61.3	56.7	4.6	8.1	60.2	55.1
Cash	95.3	.....	.....	.....	58.4	.....	.....	.....	61.3	.....
Unspecified	142.3	.....	.....	.....	79.5	.....	.....	.....	55.8	.....

[1] From the Census Bureau. [2] A minus sign (—) denotes decrease.

The value of land and buildings on all farms in the United States increased from $34,801,125,697 in 1910 to $66,334,309,556 in 1920, an increase of 90 per cent; the value of land and buildings on farms occupied by tenants increased from $10,977,232,427 in 1910 to $23,793,984,605 in 1920, or 117 per cent. (See table below.)

TABLE K-5.—*Value of farms in the United States, by tenure, 1920 and 1910.*

	Jan. 1, 1920.	Apr. 15, 1910.		Jan. 1, 1920.	Apr. 15, 1910.
VALUE OF LAND AND BUILDINGS.			VALUE OF LAND AND BUILDINGS—contd.		
All farms	$66,334,309,556	$34,801,125,697	Average per acre—Continued.		
Farms operated by—			Farms operated by—		
Owners	39,874,303,566	22,366,934,278	Owners	$62.65	$37.37
Full owners[1]	30,717,493,565	17,310,639,016	Full owners[1]	66.62	37.23
Part owners[2]	9,156,810,001	5,056,295,262	Part owners[2]	52.21	37.84
Managers	2,666,021,385	1,456,958,992	Managers	49.39	27.12
Tenants	23,793,984,605	10,977,232,427	Tenants	89.72	48.46
Average per farm:					
All farms	10,287	5,471	VALUE OF LAND ALONE.		
Farms operated by—					
Owners	10,159	5,664	All farms	54,903,453,925	28,475,674,169
Full owners[1]	9,124	5,160	Average per farm	8,514	4,476
Part owners[2]	16,394	8,515	Average per acre	57.45	32.40
Managers	38,906	25,075			
Tenants	9,693	4,662	VALUE OF BUILDINGS.		
Average per acre:					
All farms	69.41	39.60	All farms	11,430,855,631.	6,325,451,528
			Average per farm	1,773	994

[1] Owning entire farm. [2] Hiring additional land.

Digitized by Google

The same trend was shown for 1910 over 1900, as given in Table K–6.

TABLE K–6.—*Value of all farm property in the United States, 1910 and 1900, by tenure.*[1]

Class of operator.	1910	1900	Increase.	
			Amount.	Per cent.
All classes	$40,991,449,090	$20,429,901,164	$20,551,547,926	100.5
Farms operated by owners	26,669,634,373	13,753,055,102	12,916,579,271	93.9
Owning entire farm	20,730,867,111	11,276,548,792	9,454,318,319	83.8
Renting additional land	5,938,767,262	2,476,506,310	3,462,260,952	139.8
Managers	1,700,624,936	1,057,945,708	642,679,228	60.7
Tenants	12,621,189,781	5,628,900,354	6,992,289,427	124.2
Share and share, cash	7,981,203,217	3,371,703,720	4,609,499,497	136.7
Cash and unspecified	4,639,986,564	2,257,196,634	2,382,789,930	105.6

[1] From the Census Bureau.

TENANCY IN THE DIFFERENT STATES.

Such is the general situation as to tenancy in the United States. What is the relative situation in the different States?

Table K–7 gives the per cent of farms in each State operated by tenants in 1920 and in 1910, with the per cent of increase or decrease from 1910 to 1920. The States are arranged in rank from the smallest to largest per cent of tenancy in 1920. Attention is called to the following pertinent facts gleaned from this table and from Table K–8, on page 217, classifying the States in order of their decrease or increase in tenancy from 1910 to 1920.

TABLE K–7.—*Per cent of farms operated by tenants, 1910–1920, by States.*

States.	1920	1910	Per cent increased or decreased.	States.	1920	1910	Per cent increased or decreased.
Maine	4.2	4.3	− 2.3	North Dakota	25.6	14.3	+79
New Hampshire	6.7	6.9	− 2.9	Virginia	25.6	26.5	− 3.4
Massachusetts	7.1	8.1	− 12.3	Missouri	28.8	29.9	− 3.7
Connecticut	8.5	9.8	− 13.2	Maryland	28.9	29.5	− 2
Nevada	9.4	12.4	− 24.2	Ohio	29.3	28.4	+ 3.1
Utah	10.9	7.9	+ 25.3	Indiana	32.0	30.0	+ 6.6
Montana	11.3	8.9	+ 27	Kentucky	33.4	33.9	− 1.47
Vermont	11.6	12.3	− 5.7	South Dakota	34.9	24.8	+40.7
New Mexico	12.2	5.5	+122	Delaware	39.3	41.9	− 6.2
Wyoming	12.5	8.2	+ 5.24	Kansas	40.4	36.8	+ 9.7
Wisconsin	14.4	13.9	+ 3.6	Tennessee	41.1	41.1	.....
Rhode Island	15.5	18.0	− 13.9	Iowa	41.7	37.8	+10.3
Idaho	15.9	10.3	+ 54	District of Columbia	41.7	38.7	+ 7.8
West Virginia	16.2	20.5	− 21	Illinois	42.7	41.4	+ 3.1
Michigan	17.7	15.8	+ 12	Nebraska	42.9	38.1	+12.6
Arizona	18.1	9.3	+ 94.6	North Carolina	43.5	42.3	+ 2.8
Washington	18.7	13.7	+ 36.4	Oklahoma	51.0	54.8	− 7
Oregon	18.8	15.1	+ 24.5	Arkansas	51.3	50.0	+ 2.6
New York	19.2	20.8	− 7.7	Texas	53.3	52.6	+ 1.3
California	21.4	20.6	+ 3.8	Louisiana	57.1	55.3	+ 3.2
Pennsylvania	21.9	23.3	− 6	Alabama	57.9	60.2	− 3.8
Colorado	23.0	18.2	+ 26	South Carolina	64.9	63.0	+ 2.4
New Jersey	23.0	24.8	− 7.2	Mississippi	66.1	66.1	.....
Minnesota	24.7	21.0	+ 17.6	Georgia	66.6	65.6	+ 1.5
Florida	25.3	26.7	− 5.2				

NOTE.—All the States in which the percentage of farms operated by tenants was above 25 per cent are located west of the Mississippi and south of the Mason-Dixon line.

Digitized by Google

TABLE K–8.—*Decrease or increase in tenancy in each State, 1910–1920.*

DECREASE.

	Per cent.
Nevada	24.2
West Virginia	21
Rhode Island	13.9
Connecticut	13.2
Massachusetts	12.3
New York	7.7
New Jersey	7.2
Oklahoma	7
Delaware	6.2
Pennsylvania	6
Vermont	5.7
Florida	5.2
Alabama	3.8
Missouri	3.7
Virginia	3.4
New Hampshire	2.9
Maine	2.3
Maryland	2
Kentucky	1.47

INCREASE.

Texas	1.3
Georgia	1.5
South Carolina	2.4
Arkansas	2.6
North Carolina	2.8
Illinois	3.1
Ohio	3.1
Louisiana	3.2
Wisconsin	3.6
California	3.8
Wyoming	5.24
Indiana	6.6
District of Columbia	7.8
Kansas	9.7
Iowa	10.3
Michigan	12
Nebraska	12.6
Minnesota	17.6
Oregon	24.5
Utah	25.3
Colorado	26
Montana	27
Washington	36.4
South Dakota	40.7
Idaho	54
North Dakota	79
Arizona	94.6
New Mexico	122

With the exception of Nevada, all the States with declining tenancy are east of the Mississippi.

All the States in which tenancy increased 10 per cent or more are west of the Mississippi.

There was no change in Mississippi or Tennessee.

Digitized by Google

TABLE K–9.—*Number of farms in the United States, by tenure, for geographic divisions and States: 1920 and 1910.*[1]

Division and State.	Total number of farms.		Number of farms operated by—									
			All owners.		Full owners (owning entire farm).		Part owners (hiring additional land).		Managers.		Tenants.	
	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910	1920	1910
United States	6,448,366	6,361,502	3,925,095	3,948,722	3,366,546	3,354,897	558,549	593,825	68,525	58,104	2,454,746	2,354,676
Geographic divisions:												
New England	156,564	188,802	140,160	168,408	133,841	162,539	6,319	5,869	4,802	5,379	11,602	15,015
Middle Atlantic	425,149	468,379	327,106	355,036	304,605	329,423	22,501	25,613	9,853	9,072	88,190	104,271
East North Central	1,084,744	1,123,489	766,787	809,044	659,948	677,239	106,839	131,805	13,550	10,848	304,407	303,597
West North Central	1,096,973	1,109,948	711,172	758,946	543,264	580,066	167,908	178,880	10,778	8,384	375,023	342,618
South Atlantic	1,158,976	1,111,881	607,089	593,154	546,563	521,558	60,526	71,596	9,878	8,298	542,009	510,429
East South Central	1,051,600	1,042,480	525,808	510,452	468,054	438,977	57,754	71,475	3,506	3,290	522,286	528,738
West South Central	996,087	943,186	464,314	440,905	391,163	368,855	73,151	72,050	5,009	4,696	526,764	497,585
Mountain	244,109	183,446	202,515	160,844	165,094	145,029	37,421	15,815	4,116	2,912	37,478	19,690
Pacific	234,164	189,891	180,144	151,933	154,014	131,211	26,130	20,722	7,033	5,225	46,987	32,783
New England:												
Maine	48,227	60,016	45,437	56,454	44,224	55,349	1,213	1,105	786	999	2,004	2,563
New Hampshire	20,523	27,053	18,604	24,493	17,836	23,714	768	779	546	681	1,373	1,879
Vermont	29,075	32,709	25,121	28,065	23,926	26,793	1,195	1,272	568	636	3,386	4,008
Massachusetts	32,001	36,917	28,087	32,075	26,515	30,705	1,572	1,370	1,627	1,863	2,287	2,979
Rhode Island	4,083	5,292	3,245	4,087	2,971	3,831	274	256	205	251	633	954
Connecticut	22,655	26,815	19,666	23,234	18,369	22,147	1,297	1,087	1,070	949	1,919	2,632
Middle Atlantic:												
New York	193,195	215,597	151,717	166,674	139,153	152,343	12,564	14,331	4,376	4,051	37,102	44,872
New Jersey	29,702	33,487	21,889	24,133	20,752	22,992	1,137	1,141	987	1,060	6,826	8,294
Pennsylvania	202,252	219,295	153,500	164,229	144,700	154,088	8,800	10,141	4,490	3,961	44,362	51,105
East North Central:												
Ohio	256,695	272,045	177,986	192,104	157,116	162,982	20,870	29,122	3,065	2,753	75,644	77,188
Indiana	205,126	215,485	137,210	148,501	112,664	115,424	24,546	33,077	2,329	2,297	65,587	64,687
Illinois	237,181	251,872	132,575	145,107	100,904	107,300	31,671	37,807	3,410	2,386	101,196	104,379
Michigan	196,447	206,960	159,406	172,310	139,874	151,005	19,532	21,305	2,319	1,961	34,722	32,689
Wisconsin	189,295	177,127	159,610	151,022	149,390	140,528	10,220	10,494	2,427	1,451	27,258	24,654
West North Central:												
Minnesota	178,478	156,137	132,744	122,104	112,880	99,498	19,864	22,611	1,596	1,222	44,138	32,811
Iowa	213,439	217,044	121,888	133,003	99,008	106,464	22,880	26,539	2,487	1,926	89,064	82,115
Missouri	263,004	277,244	185,030	192,285	153,852	152,807	31,178	39,478	2,247	2,001	75,727	82,958
North Dakota	77,690	74,360	56,917	63,212	34,051	44,667	22,866	18,545	855	484	19,918	10,664
South Dakota	74,655	77,644	47,831	57,984	27,268	40,408	20,563	17,579	782	429	26,042	19,231
Nebraska	124,421	129,678	69,672	79,250	50,565	58,222	19,107	21,028	1,316	987	53,433	49,441
Kansas	165,286	177,841	97,090	111,108	65,640	78,008	31,450	33,100	1,496	1,285	66,701	65,398

Digitized by Google

South Atlantic:												
Delaware	10,140	10,836	6,010	6,178	5,688	5,865	322	313	144	123	3,986	4,585
Maryland	47,908	48,923	32,805	33,519	30,842	31,120	1,963	2,399	1,262	968	13,841	14,416
District of Columbia	204	217	100	118	91	111	9	7	19	15	85	94
Virginia	188,242	134,018	136,363	133,664	121,454	117,964	14,909	15,700	2,134	1,625	47,745	48,739
West Virginia	87,289	96,685	72,101	75,978	66,220	68,318	5,881	7,660	1,090	872	14,098	19,965
North Carolina	269,763	253,736	151,376	145,320	131,847	121,382	19,929	23,938	928	1,118	117,459	107,287
South Carolina	192,693	176,434	67,724	64,350	60,089	55,523	7,635	8,827	738	863	124,231	111,231
Georgia	310,732	291,027	102,123	98,628	94,575	88,768	7,548	9,860	1,734	1,419	206,875	190,960
Florida	54,005	50,016	38,487	35,399	35,757	32,507	2,730	2,892	1,829	1,275	13,689	13,342
East South Central:												
Kentucky	270,626	259,185	179,327	170,362	159,206	148,832	20,121	21,500	969	993	90,330	87,360
Tennessee	252,774	246,012	148,082	144,125	129,532	120,081	18,550	24,044	807	826	103,885	101,061
Alabama	256,009	262,901	107,089	103,929	95,548	87,589	11,541	16,340	741	646	148,269	158,326
Mississippi	272,101	274,382	91,310	92,066	83,768	82,475	7,542	9,591	989	825	179,802	181,491
West South Central:												
Arkansas	232,604	214,678	112,653	106,649	98,043	87,866	14,610	18,783	738	763	119,218	107,366
Louisiana	135,463	120,546	57,254	52,989	51,895	48,590	5,359	4,399	828	950	77,381	66,607
Oklahoma	191,987	190,192	93,217	85,404	69,786	64,884	23,431	20,520	935	651	97,835	104,137
Texas	436,033	417,770	201,190	195,863	171,439	167,515	29,751	28,348	2,508	2,332	232,335	219,575
Mountain:												
Montana	57,677	26,214	50,271	23,365	38,431	21,525	11,840	1,840	899	505	6,507	2,344
Idaho	42,106	30,807	34,647	27,169	30,299	24,940	4,348	2,229	758	450	6,701	3,188
Wyoming	15,748	10,987	13,403	9,779	10,681	8,677	2,722	1,102	377	311	1,968	897
Colorado	59,934	46,170	45,291	36,993	35,553	32,474	9,738	4,519	880	787	13,763	8,390
New Mexico	29,844	35,676	25,756	33,398	21,533	30,417	4,223	2,961	433	321	3,655	1,957
Arizona	9,975	9,227	7,869	8,203	6,970	7,759	899	444	805	163	1,801	861
Utah	25,662	21,676	22,579	19,762	19,134	17,176	3,445	2,586	296	194	2,787	1,720
Nevada	3,163	2,689	2,699	2,175	2,493	2,061	206	114	168	181	296	333
Pacific:												
Washington	66,288	56,192	52,701	47,505	44,832	41,729	7,869	5,776	1,168	961	12,419	7,726
Oregon	50,206	45,502	39,863	37,796	33,300	32,982	6,563	4,814	916	847	9,427	6,859
California	117,670	88,197	87,580	66,632	75,882	56,500	11,698	10,182	4,949	3,417	25,141	18,148

[1] From the Bureau of the Census.

Digitized by Google

The per cent of farms operated by tenants increased in all but two Southern States—Florida and Alabama. The number of tenants actually increased in Florida from 13,342 in 1910 to 13,689 in 1920. The number of farms, however, increased from 50,000 to 54,000, hence the per cent of farms operated by tenants is lower, though the actual number increased. In Alabama the number of farms in the State decreased from 1910 to 1920, and the number of tenants did not decrease as rapidly as did the number of farms.

Tenancy increased in all States west of the Mississippi except Nevada, Oklahoma, and Missouri. The number of farms in Nevada is very small, and that number increased 18 per cent from 1910 to 1920. There were but 37 fewer tenants in the State in 1920 than there were in 1910. Oklahoma is a new State, and yet over half its farms are operated by tenants. The total number of farms in Missouri was less in 1920 than in 1910, and tenancy declined a little more than did the number of farms.

As a rule, tenancy is highest in the Southern and Western States, and in the last 10 years increased most rapidly in the Western States.

Tenants now operate over one-fourth of the farms in half our States, over 40 per cent of the farms in 15 States, and over half the farms in eight States.

In general, tenancy has been declining in the eastern, and increasing in the western and southern parts of the country, where it is especially high.

TABLE K-10.—*Per cent of all farms operated by tenants, by States, 1880–1920.*

[From Census Reports.]

States.	1920	1910	1900	1890	1880
Maine	4.2	4.3	4.7	5.4	4.3
New Hampshire	6.7	6.9	7.5	8.0	8.1
Massachusetts	7.1	8.1	9.6	9.3	8.2
Connecticut	8.5	9.8	12.9	11.5	10.2
Nevada	9.4	12.4	11.4	7.5	9.7
Utah	10.9	7.9	8.8	5.2	4.6
Montana	11.3	8.9	9.2	4.8	5.3
Vermont	11.6	12.3	14.6	14.6	13.4
New Mexico	12.2	5.5	9.4	4.5	8.1
Wyoming	12.5	8.2	7.6	4.2	2.8
Wisconsin	14.4	13.9	13.5	11.4	9.1
Rhode Island	15.5	18.0	20.2	18.7	19.9
Idaho	15.9	10.3	8.8	4.6	4.7
West Virginia	16.2	20.5	21.8	17.7	19.1
Michigan	17.7	15.8	15.8	14.0	10.0
Arizona	18.1	9.3	8.4	7.9	13.2
Washington	18.7	13.7	14.4	8.5	7.2
Oregon	18.8	15.1	17.8	12.6	14.1
New York	19.2	20.8	23.9	20.2	16.5
California	21.4	20.6	23.1	17.8	19.8
Pennsylvania	21.9	23.3	26.0	23.3	21.2
Colorado	23.0	18.2	22.6	11.2	13.0
New Jersey	23.0	24.8	29.9	27.2	24.6
Minnesota	24.7	21.0	17.3	12.9	9.1
Florida	25.3	26.7	26.5	23.6	30.9
North Dakota	25.6	14.3	8.5	6.9	3.9
Virginia	25.6	26.5	30.7	26.9	29.5
Missouri	28.8	29.9	30.5	26.8	27.3
Maryland	28.9	28.5	33.6	31.0	30.9
Ohio	29.3	28.4	27.4	22.9	19.3
Indiana	32.0	30.0	28.6	25.4	23.7
Kentucky	33.4	33.9	32.8	25.0	26.5
South Dakota	34.9	24.8	21.8	13.2	(1)
Delaware	39.3	41.9	50.3	46.9	42.4
Kansas	40.4	36.8	35.2	28.2	16.3
Tennessee	41.1	41.1	40.6	30.8	34.5
Iowa	41.7	37.8	34.9	28.1	23.8
District of Columbia	41.7	38.7	43.1	36.6	38.2
Illinois	42.7	41.4	39.3	34.0	31.4

[1] No report.

Digitized by Google

TABLE K-10.—*Per cent of all farms operated by tenants, by States, 1880–1920*—Contd.

States.	1920	1910	1900	1890	1880
Nebraska	42.9	38.1	36.9	24.7	18.0
North Carolina	43.5	42.3	41.4	34.1	33.5
Oklahoma	51.0	54.8	43.8	.7	[1]
Arkansas	51.3	50.0	45.4	32.1	30.9
Texas	53.3	52.6	49.7	41.9	37.6
Louisiana	57.1	55.3	58.0	44.4	35.2
Alabama	57.9	60.2	57.7	48.6	46.8
South Carolina	64.9	63.0	61.1	55.3	50.3
Mississippi	66.1	66.1	62.4	52.8	43.8
Georgia	66.6	65.6	59.9	53.5	44.9

[1] No report.

In reaching a conclusion as to the relative status of tenancy in each of the States, the trend toward an increase or decrease in the number of farms must be considered also. Thus in the 19 States with declining tenancy, the number of farms in the State decreased in all save 3, though not usually at as rapid a rate as did tenancy (see Table K–8, page 217); whereas tenancy increased in 10 States in which the number of farms decreased. The largest increase in tenancy when compared with the increase or decrease in farms was in South Dakota, Idaho, North Dakota, Arizona, and New Mexico.

TABLE K–11.—*The per cent of increase or decrease in the number of farms and in tenancy, 1910–1920.*

State.	Per cent that tenancy increased or decreased.	Per cent that number of farms increased or decreased.	State.	Per cent that tenancy increased or decreased.	Per cent that number of farms increased or decreased.
Nevada	−24.2	+18	North Carolina	+ 2.8	+ 6
West Virginia	−21	−10	Illinois	+ 3.1	− 6
Rhode Island	−13.9	−23	Ohio	+ 3.1	− 6
Connecticut	−13.2	−16	Louisiana	+ 3.2	+12
Massachusetts	−12.3	−13	Wisconsin	+ 3.6	+ 7
New York	− 7.7	−10	California	+ 3.8	+33
New Jersey	− 7.2	−11	Wyoming	+ 5.24	+43
Oklahoma	− 7	+ 1	Indiana	+ 6.6	− 5
Delaware	− 6.2	− 6	District of Columbia	+ 7.8	− 6
Pennsylvania	− 6	− 8	Kansas	+ 9.7	− 7
Vermont	− 5.7	−11	Iowa	+ 10.3	− 2
Florida	− 5.2	+ 8	Michigan	+ 12	− 50
Alabama	− 3.8	− 3	Nebraska	+ 12.6	− 4
Missouri	− 3.7	− 5	Minnesota	+ 17.6	+14
Virginia	− 3.4	+ 1	Oregon	+ 24.5	+10
New Hampshire	− 2.9	−24	Utah	+ 25.3	+18
Maine	− 2.3	−20	Colorado	+ 26	+30
Maryland	− 2	− 2	Montana	+ 27	+12
Mississippi	.....	− 1	Washington	+ 36.4	+18
Tennessee	.....	+ 3	South Dakota	+ 40.7	− 4
Texas	+ 1.3	+ 4	Idaho	+ 54	+37
Kentucky	+ 1.47	+ 4	North Dakota	+ 79	+ 4
Georgia	+ 1.5	+ 7	Arizona	+ 94.6	+ 8
South Carolina	+ 2.4	+ 9	New Mexico	+122	−16
Arkansas	+ 2.6	+ 8			

The States in which tenantry increased at a rate more rapid than the rate of decrease or increase in the number of farms in the last decade were: West Virginia, Rhode Island, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Vermont, Missouri, New Hampshire, Maine, Mississippi, Illinois, Ohio, Indiana, Kansas, Iowa, Michigan, Nebraska, Minnesota, Oregon, Utah, Colorado,

Digitized by Google

Washington, South Dakota, Idaho, North Dakota, Arizona, New Mexico.

The States in which tenantry decreased at a rate more rapid than the rate of increase or decrease in farms were: Nevada, Oklahoma, Delaware, Florida, Alabama, Virginia, Tennessee, Texas, Kentucky, Georgia, South Carolina, Arkansas, North Carolina, Louisiana, Wisconsin, California, Wyoming, Montana.

Tenants operate 48.7 per cent of all the farms in the 13 leading cotton States, 40.2 per cent in the 11 leading hog States, 37.8 per cent of all the farms in the 11 leading corn States, 32.8 per cent in the 11 leading wheat States, 31.6 per cent in the 10 States leading in the number of dairy cows, 31.2 per cent in the 10 leading tobacco States, and 30.7 per cent in the 11 leading cattle States, as compared with an average of 38.1 per cent for the United States as a whole.

TABLE K-12.—*Per cent of tenancy in 1920 in the States leading in specified farm products.*

THE LEADING STATES IN TOBACCO PRODUCTION.

States.	Production.	Per cent of tenants, 1920.	Per cent of increase or decrease tenancy.	States.	Production.	Per cent of tenants, 1920.	Per cent of increase or decrease tenancy.
Kentucky	467,500,000	33.4	−1.47	Wisconsin	62,400,000	14.4	3.6
North Carolina	384,120,000	43.5	2.8	Ohio	60,480,000	29.3	3.1
Virginia	177,390,000	25.6	3.4	Pennsylvania	60,400,000	21.9	− 6.0
Tennessee	85,410,000	41.1	.....	Connecticut	36,112,000	8.5	−13.2
South Carolina	66,950,000	64.9	2.4	Maryland	30,625,000	28.9	− 2.0

THE LEADING STATES IN WHEAT PRODUCTION.

Kansas	137,056,000	40.4	9.7	Missouri	32,721,000	28.8	3.7
North Dakota	68,400,000	25.6	79.0	Minnesota	29,116,000	24.7	17.6
Nebraska	60,480,000	42.9	12.6	Ohio	28,698,000	29.3	3.1
Oklahoma	46,240,000	51.0	−7.0	South Dakota	26,282,000	34.9	40.7
Illinois	40,670,000	42.7	12.6	Pennsylvania	25,284,000	21.9	−6.0
Washington	37,982,000	18.7	36.4				

THE LEADING STATES IN NUMBER OF DAIRY COWS.

Wisconsin	1,846,000	14.4	3.6	Ohio	1,061,000	29.3	3.1
New York	1,493,000	19.2	−7.7	Illinois	1,060,000	42.7	12.6
Minnesota	1,395,000	24.7	17.6	Pennsylvania	970,000	21.9	−6.0
Iowa	1,353,000	41.7	10.3	Kansas	935,000	40.4	9.7
Texas	1,138,000	53.3	1.3	Missouri	919,000	28.8	−3.7

THE LEADING STATES IN NUMBER OF HOGS.

Iowa	10,389,000	41.7	10.3	Georgia	3,165,000	66.6	1.5
Illinois	5,323,000	42.7	12.6	Minnesota	2,951,000	24.7	17.6
Indiana	4,760,000	32.0	6.6	Mississippi	2,396,000	66.1	.....
Ohio	4,351,000	29.3	3.1	Texas	2,236,000	53.3	1.3
Missouri	4,305,000	28.8	3.7	Wisconsin	3,336,000	14.4	3.6
Nebraska	3,336,000	42.9	12.6				

THE LEADING STATES IN NUMBER OF CATTLE OTHER THAN DAIRY CATTLE.

Texas	4,458,000	53.3	1.3	California	1,684,000	21.4	3.8
Nebraska	2,911,000	42.9	12.6	South Dakota	1,526,000	34.9	40.7
Iowa	2,775,000	41.7	10.3	Wisconsin	1,493,000	14.4	3.6
Kansas	2,161,000	40.4	9.7	New Mexico	1,378,000	12.2	122
Missouri	1,746,000	28.8	−3.7	Colorado	1,355,000	23.0	26.0
Minnesota	1,730,000	24.7	17.6				

Digitized by Google

FARMS RUN BY MANAGERS.

There has also been an increase in absentee ownership as shown by the increase in the number of farms run by managers. The acreage of those run by managers increased but one-half of 1 per cent from 1910 to 1920. The average acreage per manager decreased from 924.7 acres in 1910 to 787.7 acres in 1920, while the number of farms operated by managers increased from 0.9 per cent to 1.1 per cent of the total number of farms in this country. The number actually operated by managers, however, increased 17.9 per cent in this decade. Managers operated 68,530 (1.1 per cent) out of the 6,448,366 farms in this country in 1920. The value of farms operated by managers did not increase as rapidly as did the value of farms operated either by their owners or by tenants.

CONCLUSION.

Tenancy is slightly increasing in this country. Our farms were once operated largely by their owners, but now 4 out of every 10 of them are operated by tenants or managers. The tenant problem is an increasingly important one throughout the West and South particularly. When acreage and value of land and buildings are considered, as well as the per cent of farms operated by tenants, tenantry in this country has increased in the last decade at about the same rate as from 1900 to 1910, though not as rapidly as from 1880 to 1890, and particularly from 1890 to 1900.

Digitized by Google

CHAPTER XII.

TRANSPORTATION.

Freight rates bear an important relation to the prices obtainable for commodities transported. This is especially true of agricultural products because, for the most part, the price which the farmer receives is that paid at the terminal or other place where his product comes into competition with the products of other farmers of other localities or countries, less the freight from the local market to the terminal.

Pyramided advances in freight rates have been made since 1913 until the existing level of rates represents the highest basis of transportation charges ever assessed in the history of this country. This high level of rates contributes materially to the restrictions placed upon industry and commerce by the existing agricultural and industrial depression.

Numerous instances have been brought to the attention of the commission from which it appears that the total returns in the sale of certain products were absorbed by the freight charges, leaving the producer nothing for his time, labor, and investment in producing them. This is especially true in many cases of shipments of perishables. Other cases have been brought to the attention of the commission in which the movement of farm products has been wholly prohibited because the price at the terminal would be absorbed by the freight charges.

We are convinced that a reduction in freight rates, from the farmer's standpoint both as a producer and a consumer, is absolutely essential to anything approximating a normal return of prices for farming operations. The commission believes that an immediate reduction of freight rates on farm products is absolutely necessary to a renewal of normal agricultural operations and prosperity and recommends prompt action by the railroads and the constituted public authority controlling transportation rates, looking to a scientific readjustment downward of existing tariffs on agricultural products.[1] The commission will deal further with the question of transportation and transportation requirements in a report to be made in the early future.

[1] Since this recommendation was agreed to, certain reductions in freight rates upon agricultural products have been made.

Digitized by Google

CHAPTER XIII.

RETAIL PRICES.

One of the factors which contributed to the difficulties of the farmers in the last half of 1920 and the first half of 1921 was the failure of retailers to reduce the proportion of the consumer's prices taken by them in the same proportion that wholesale prices fell. In the general decline of prices which occurred during the last 18 months, prices of commodities at retail lagged behind wholesale prices and still farther behind prices of farm products. This had the effect of still further diminishing the purchasing power of the farmer's dollar during this period of declining prices.

An attempt has been made to bring together the wholesale and retail prices of commodities and to work out indexes which would show the relative trend of wholesale and retail prices of different commodities and the trend of the margin taken by the retailer during the period January, 1913, to April, 1921.

It should be remembered in connection with the tables in this chapter that they are brought together for the purpose of showing trends of wholesale and retail prices and the margins between them and that hard and fast conclusions can not be drawn from specific comparisons of wholesale and retail prices at given dates, without making allowance for the fact that the prices given are averages which only in a very general way reflect actual prices and margins.

It should also be remembered that the wholesale prices given in the tables in this chapter represent in some cases the prices paid by the wholesaler and in others the wholesale price at point of shipment and not the prices of the goods delivered to the retailer. The margin, therefore, while indicated as the margin to the retailer, represents in fact, in some cases, all of the distributing costs, including profits of wholesaler and retailer, between the price paid by the wholesaler for the goods and the price paid by the ultimate consumer, including transportation, cartage, warehousing, insurance, and all of the other numerous factors of cost and service intervening between the price paid or received by the wholesaler and the price paid by the ultimate consumer for the article.

Table L–1, on page 226, gives the actual retail and the actual and relative wholesale price of corn meal, the price differential taken by the retailer, the per cent of the wholesale price taken by the retailer, the relative increase or decrease in the percentage of the wholesale price taken by the retailer, and the relative price differential by months from January, 1913, to March, 1920.

Digitized by Google

TABLE L-1.—*Wholesale and retail price changes of white corn meal and relative increase in margins, 1913 to 1921.*

Months.	Retail.	Wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, 1913=100.	Relative price differential, 1913=100.
1913.							
January	$0.030	$0.0142	100	$0.0158	111	100	101
February	.029	.0132	93	.0158	120	108	101
March	.029	.0132	93	.0158	120	108	101
April	.029	.0132	93	.0158	120	108	101
May	.029	.0132	93	.0158	120	108	101
June	.029	.0137	96	.0153	112	101	97
July	.030	.0137	96	.0163	119	107	104
August	.030	.0137	96	.0163	119	107	104
September	.031	.0147	104	.0163	111	100	104
October	.031	.0162	114	.0148	91	82	94
November	.031	.0157	111	.0153	97	87	97
December	.031	.0157	111	.0153	97	87	97
1914.							
January	.031	.0152	107	.0158	104	94	101
February	.031	.0147	104	.0163	111	100	104
March	.031	.0147	104	.0163	111	100	104
April	.031	.0147	104	.0163	111	100	104
May	.031	.0147	104	.0163	111	100	104
June	.031	.0142	100	.0168	118	106	107
July	.031	.0142	100	.0168	118	106	107
August	.031	.0142	100	.0168	118	106	107
September	.033	.0190	134	.0139	73	66	89
October	.033	.0190	134	.0139	73	66	89
November	.033	.0177	125	.0153	86	77	97
December	.032	.0155	109	.0165	106	95	105
1915.							
January	.033	.0155	109	.0175	113	102	111
February	.033	.0167	118	.0163	98	88	104
March	.033	.0187	132	.0143	76	68	91
April	.033	.0177	125	.0153	86	77	97
May	.033	.0177	125	.0153	86	77	97
June	.033	.0172	121	.0158	92	83	101
July	.033	.0172	121	.0158	92	83	101
August	.032	.0170	120	.0149	88	79	95
September	.032	.0175	123	.0145	83	75	92
October	.032	.0172	121	.0148	86	77	94
November	.032	.0172	121	.0148	86	77	94
December	.032	.0172	121	.0148	86	77	94
1916.							
January	.032	.0172	121	.0148	86	77	94
February	.032	.0190	134	.0129	68	61	82
March	.032	.0190	134	.0129	68	61	82
April	.032	.0200	141	.0119	54	49	76
May	.032	.0210	148	.0109	52	47	69
June	.032	.0185	130	.0135	73	66	86
July	.032	.0195	137	.0125	64	58	80
August	.033	.0200	141	.0129	64	58	82
September	.034	.0210	148	.0129	61	55	82
October	.035	.0210	148	.0139	66	59	89
November	.038	.0260	183	.0119	46	41	76
December	.039	.0275	194	.0115	42	38	73
1917.							
January	.040	.0249	175	.0151	61	55	96
February	.041	.0253	178	.0157	62	56	100
March	.041	.0279	196	.0131	47	42	83
April	.046	.0375	264	.0085	22	20	54
May	.053	.0413	291	.0117	28	25	95
June	.055	.0413	291	.0137	33	30	87
July	.059	.0488	344	.0102	21	19	65
August	.066	.0556	392	.0104	19	17	66
September	.081	.0531	374	.0279	53	48	178
October	.070	.0512	361	.0188	37	33	120
November	.071	.0507	357	.0203	40	36	129
December	.071	.0486	342	.0224	46	41	143

Digitized by Google

TABLE I.—*Wholesale and retail price changes of white corn meal and relative increase in margins, 1913 to 1921*—Continued.

Months.	Retail.	Wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, 1913=100.	Relative price differential, 1913=100.
1918.							
January	$0.070	$0.0483	340	$0.0217	45	41	138
February	.070	.0543	382	.0157	29	26	100
March	.072	.0515	363	.0205	40	36	131
April	.071	.0535	377	.0175	33	30	111
May	.070	.0458	323	.0242	53	48	154
June	.067	.0445	313	.0225	51	46	143
July	.067	.0482	339	.0188	39	35	120
August	.068	.0445	313	.0235	53	48	150
September	.069	.0398	280	.0292	73	66	186
October	.068	.0340	239	.0339	100	90	216
November	.065	.0302	213	.0348	115	104	222
December	.064	.0323	227	.0317	98	88	202
1919.							
January	.062	.0315	222	.0305	97	87	194
February	.060	.0283	299	.0317	112	101	202
March	.059	.0315	222	.0275	87	78	175
April	.060	.0352	248	.0248	70	63	158
May	.062	.0381	268	.0239	62	56	152
June	.063	.0393	277	.0237	60	54	151
July	.065	.0448	315	.0202	45	41	129
August	.066	.0428	301	.0232	54	49	148
September	.067	.0325	229	.0345	106	95	220
October	.066	.0295	208	.0365	124	112	233
November	.066	.0306	215	.0354	116	105	225
December	.066	.0308	217	.0352	114	103	224
1920.							
January	.066	.0308	217	.0352	114	103	224
February	.065	.0301	212	.0349	116	105	222
March	.065	.0345	243	.0305	88	79	194
April	.065	.0377	265	.0273	72	65	174
May	.067	.0422	297	.0248	59	53	158
June	.069	.0437	308	.0253	58	52	161
July	.070	.0359	253	.0341	95	86	217
August	.069	.0340	239	.0349	103	93	222
September	.068	.0286	201	.0394	138	124	251
October	.065	.0215	151	.0435	202	182	277
November	.059	.0138	97	.0452	328	295	288
December	.055	.0153	108	.0397	259	233	253
1921.							
January	.052	.0135	95	.0385	285	257	245
February	.050	.0142	100	.0358	252	227	228
March	.048	.0137	96	.0343	250	225	218

It will be noted that as the wholesale price of corn meal rose during 1913, 1914, 1915, 1916, and 1917 the price differential or margin taken by the retailer tended to decrease and that in 1918, 1919, and 1920, as the wholesale price of corn meal tended to decline, the differential or margin of the retailer tended to increase, so that in February, 1921, when the wholesale price of corn meal was exactly the same as it was in January, 1913, the differential of retailer was more than double what it was in January, 1913.

Digitized by Google

RICE.

Table L–2 gives the retail and actual and relative wholesale price of rice, the differentials between the wholesale price and the retail price, the percentage of the wholesale price taken by the retailer, the relative increase or decrease in the percentage taken by the retailer, and the relative price differential by months from January, 1913, to March, 1921.

TABLE L–2.—*Wholesale and retail price changes of Honduras head rice and relative per cent increase in margins, 1913 to 1921.*

Months.	Retail.	Wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, 1913=100.	Relative price differential, 1913=100.
1913.							
January	$0.086	$0.054	98	$0.032	59	105	103
February	.086	.054	98	.032	59	105	103
March	.086	.054	98	.032	59	105	103
April	.086	.054	98	.032	59	105	103
May	.086	.054	98	.032	59	105	103
June	.086	.054	98	.032	59	105	103
July	.087	.054	98	.033	61	109	106
August	.087	.057	104	.030	52	93	97
September	.087	.057	104	.030	52	93	97
October	.087	.057	104	.030	52	93	97
November	.087	.057	104	.030	52	93	97
December	.087	.057	104	.030	52	93	97
1914.							
January	.087	.058	105	.029	50	89	94
February	.087	.058	105	.029	50	89	94
March	.087	.058	105	.029	50	89	94
April	.087	.058	105	.029	50	89	94
May	.087	.058	105	.029	50	89	94
June	.087	.058	105	.029	50	89	94
July	.088	.058	105	.030	52	93	97
August	.088	.058	105	.030	52	93	97
September	.088	.061	111	.027	44	79	87
October	.088	.061	111	.027	44	79	87
November	.088	.063	115	.025	40	71	81
December	.088	.063	115	.025	40	71	81
1915.							
January	.091	.050	91	.041	82	146	132
February	.091	.049	89	.042	86	154	135
March	.091	.049	89	.042	86	154	135
April	.091	.049	89	.042	86	154	135
May	.091	.049	89	.042	86	154	135
June	.091	.049	89	.042	86	154	135
July	.091	.049	89	.042	86	154	135
August	.091	.050	91	.041	82	146	132
September	.091	.042	76	.049	117	209	158
October	.091	.042	76	.049	117	209	158
November	.090	.047	85	.043	91	162	139
December	.090	.047	85	.043	91	162	139
1916.							
January	.091	.045	82	.046	102	182	148
February	.091	.045	82	.046	102	182	148
March	.091	.047	85	.044	94	168	142
April	.091	.046	84	.045	98	175	145
May	.091	.046	84	.045	98	175	145
June	.091	.046	84	.045	98	175	145
July	.091	.046	84	.045	98	175	145
August	.091	.045	82	.045	100	179	145
September	.091	.044	80	.047	107	191	152
October	.091	.043	78	.048	111	198	155
November	.091	.045	82	.046	102	182	148
December	.091	.047	85	.044	94	168	142
1917.							
January	.091	.048	87	.043	90	161	139
February	.091	.048	87	.043	90	161	139
March	.091	048	87	.043	90	161	139

Digitized by Google

TABLE I–2.—*Wholesale and retail price changes of Honduras head rice and relative per cent increase in margins, 1913 to 1921*—Continued.

Months.	Retail.	Wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, 1913=100.	Relative price differential, 1913=100.
1917.							
April	$0.094	$0.049	89.	$0.045	92	164	145
May	.105	.070	127	.035	50	89	113
June	.109	.071	129	.038	54	96	123
July	.107	.071	129	.026	37	66	84
August	.106	.072	131	.034	47	74	110
September	.108	.070	127	.038	54	96	123
October	.111	.077	140	.034	44	79	110
November	.114	.078	142	.036	46	82	116
December	.116	.079	144	.037	47	84	119
1918.							
January	.117	.079	144	.038	48	86	123
February	.118	.081	147	.027	33	59	87
March	.120	.085	155	.035	41	73	113
April	.121	.090	064	.031	34	61	100
May	.123	.091	165	.032	35	62	103
June	.125	.091	165	.034	37	66	110
July	.129	.094	171	.035	37	66	113
August	.134	.091	165	.043	47	84	139
September	.137	.091	165	.046	51	91	148
October	.140	.091	165	.049	54	96	158
November	.140	.091	165	.049	54	96	158
December	.139	.091	165	.048	53	95	155
1919.							
January	.138	.091	165	.047	52	93	152
February	.143	.091	165	.052	57	102	168
March	.134	.091	165	.043	47	84	139
April	.134	.089	162	.045	51	91	145
May	.134	.088	160	.046	52	93	148
June	.138	.091	165	.047	52	93	152
July	.146	.117	213	.029	25	45	94
August	.155	.143	260	.012	8	14	39
September	.165	.127	231	.038	30	54	123
October	.173	.121	220	.052	43	77	168
November	.176	.127	231	.049	39	70	158
December	.177	.124	225	.053	43	77	171
1920.							
January	.181	.127	231	.054	43	77	174
February	.183	.128	233	.055	43	77	177
March	.184	.125	227	.059	47	84	190
April	.186	.123	224	.063	51	91	203
May	.187	.122	222	.065	53	95	210
June	.187	.123	224	.064	52	93	206
July	.186	.125	227	.061	49	87	197
August	.183	.102	185	.081	79	141	261
September	.176	.095	173	.081	85	152	261
October	.161	.079	144	.082	104	186	264
November	.142	.068	124	.074	108	193	239
December	.132	.066	120	.076	115	205	245
1921.							
January	.119	.046	84	.073	159	284	235
February	.105	.048	87	.057	119	212	184
March	.098	.045	82	.053	118	211	171
April	.092						

This table shows, as did the preceding table, that the margin or differential of the retailer tends to decrease as wholesale prices rise and to increase as prices fall. The wholesale price of rice in January, 1913, was 5.4 cents and the retail price 8.6 cents per pound. The retailer's margin was 3.2 cents or 59 per cent of the wholesaler's price. In January, 1921, the wholesale price of rice was 4.6 cents, the retail price 11.9 cents, and the retailer's margin 7.3 cents, or 159 per cent of the wholesale price. Retailer's margin had increased over 100 per cent.

Digitized by Google

SUGAR.

The following table gives the retail and actual and relative wholesale price of sugar, the difference between wholesale and retail price, the per cent of the wholesale price taken by the retailer, the relative increase or decrease in the percentage of the wholesale price taken by the retailer, and the relative price differential by months from January, 1913, to March, 1921:

TABLE L–3.—*Wholesale and retail price changes of granulated sugar and relative per cent increase in margins, 1913 to 1921.*

Months.	Retail.	Wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, 1913=100.	Relative price differential, 1913=100.
1913.							
January	$0.058	$0.045	105	$0.013	29	104	108
February	.055	.042	98	.013	31	111	108
March	.054	.042	98	.012	29	104	100
April	.054	.041	95	.013	32	114	108
May	.054	.041	95	.013	32	114	108
June	.053	.041	95	.012	29	104	100
July	.055	.045	105	.010	22	79	83
August	.056	.046	107	.010	21	75	83
September	.057	.045	105	.012	27	96	100
October	.055	.042	98	.013	32	114	108
November	.054	.042	98	.012	29	104	100
December	.054	.041	95	.013	32	114	108
1914.							
January	.052	.039	91	.013	33	118	108
February	.052	.039	91	.013	33	118	108
March	.051	.038	88	.013	34	121	108
April	.050	.037	86	.013	35	125	108
May	.050	.039	91	.011	28	100	92
June	.051	.042	98	.009	21	75	75
July	.052	.042	98	.010	23	82	83
August	.079	.065	151	.014	21	75	117
September	.080	.068	158	.012	17	61	100
October	.072	.059	137	.013	22	79	108
November	.062	.049	114	.013	26	93	108
December	.061	.048	112	.013	27	96	108
1915.							
January	.060	.048	112	.012	25	89	100
February	.065	.055	128	.010	18	64	83
March	.066	.057	133	.009	16	57	75
April	.067	.058	135	.009	16	57	75
May	.068	.058	135	.010	17	61	83
June	.069	.058	135	.011	19	68	92
July	.070	.058	135	.012	21	75	100
August	.067	.055	128	.012	22	79	100
September	.065	.050	116	.015	30	107	125
October	.061	.049	114	.012	24	86	100
November	.066	.056	130	.010	18	64	83
December	.068	.059	137	.009	15	54	75
1916.							
January	.067	.057	133	.010	18	64	83
February	.069	.059	137	.010	17	61	83
March	.075	.066	154	.009	14	50	75
April	.080	.071	165	.009	13	46	75
May	.086	.075	174	.011	15	54	92
June	.087	.074	172	.013	18	64	108
July	.088	.075	174	.013	17	61	108
August	.085	.070	163	.015	21	75	125
September	.077	.064	149	.013	20	71	108
October	.082	.071	165	.011	15	54	92
November	.086	.074	172	.012	16	57	100
December	.083	.069	160	.014	20	71	117

Digitized by Google

TABLE L–3.—*Wholesale and retail price changes of granulated sugar and relative per cent increase in margins, 1913 to 1921*—Continued.

Months.	Retail.	Wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, 1913=100.	Relative price differential, 1913=100.
1917.							
January	$0.080	$0.066	153	$0.014	21	75	117
February	.081	.069	160	.012	17	61	100
March	.088	.071	172	.017	23	82	142
April	.096	.082	191	.014	17	61	117
May	.101	.079	184	.022	28	100	183
June	.094	.075	174	.019	25	89	158
July	.092	.075	174	.017	23	82	142
August	.100	.082	191	.018	22	79	150
September	.099	.082	191	.017	21	75	142
October	.098	.082	191	.016	20	71	133
November	.096	.082	191	.014	17	61	117
December	.095	.080	186	.015	19	68	125
1918.							
January	.095	.074	172	.021	28	100	175
February	.106	.073	170	.023	31	111	192
March	.092	.073	170	.019	26	93	158
April	.091	.073	170	.018	25	89	150
May	.091	.073	170	.018	25	89	150
June	.091	.073	170	.018	25	89	150
July	.092	.074	172	.018	24	86	150
August	.093	.074	172	.019	26	93	158
September	.096	.085	198	.011	13	46	92
October	.106	.088	205	.018	20	71	150
November	.108	.088	205	.020	23	82	167
December	.108	.088	205	.020	23	82	167
1919.							
January	.108	.088	205	.020	23	82	167
February	.107	.088	205	.019	22	79	158
March	.106	.088	205	.018	20	71	150
April	.106	.088	205	.018	20	71	150
May	.106	.088	205	.018	20	71	150
June	.106	.088	205	.018	20	71	150
July	.109	.088	205	.021	24	86	175
August	.111	.088	205	.023	26	93	192
September	.110	.088	205	.022	25	89	183
October	.114	.088	205	.026	30	107	217
November	.125	.088	205	.037	42	150	308
December	.145	.109	253	.036	33	118	300
1920.							
January	.178	.154	358	.024	15	54	200
February	.188	.150	349	.038	25	89	317
March	.187	.137	319	.050	36	129	417
April	.202	.192	447	.010	5	18	83
May	.254	.225	523	.029	13	46	242
June	.267	.212	493	.055	26	93	458
July	.265	.191	444	.074	39	139	617
August	.229	.167	388	.062	37	132	517
September	.183	.143	333	.040	28	100	333
October	.139	.108	251	.031	29	104	258
November	.128	.096	223	.032	33	118	267
December	.105	.081	188	.024	30	107	200
1921.							
January	.097	.076	177	.021	28	100	175
February	.089	.071	165	.018	25	89	150
March	.097	.078	181	.019	24	86	158
April	.097						

Digitized by Google

Up to December, 1916, the retailer's margin or differential on sugar has remained approximately the same, but owing to the increase in the wholesale price, the percentage of the wholesale price taken by the retailer tended to decline, but with the rising prices from 1917, 1918, 1919, and 1920, the retailer's margin also tended to rise somewhat, although continuing to be a relatively small percentage of the wholesale price. With the rapid decline of wholesale prices beginning in June, 1920, the retailer's margin began to rise. In other words, the retail price did not drop at the same rate as the wholesale price, although it dropped in nearer ratio with the wholesale price than in the case of either corn meal or rice.

SIRLOIN STEAK (NEW YORK).

Table L–4 gives the retail price of sirloin steak, the actual and relative wholesale price per pound, at New York, of beef loins No. 2, the price differential taken by the retailer, the per cent of the wholesale price taken by the retailer, the relative increase or decrease in the percentage of the wholesale price taken by the retailer, and the relative retail differential by months from January, 1919, to April, 1921.

TABLE L–4.—*Wholesale and retail price of sirloin steak at New York, 1919–1921.*

[Monthly Labor Review, Bureau of Labor Statistics.]

	Sirloin steak, retail, per pound.	Beef, No. 2 loins, wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in percentage of wholesale price taken by retailer, 1913=100.	Relative retail differential, 1913=100.
	Cents.	*Cents.*		*Cents.*			
1913 average	25.9	15.8	100	10.1	63	63	.....
1919.							
January	44.8	37.0	234	7.8	21	33	77
February	44.9	35.0	222	9.9	28	44	98
March	44.9	39.0	247	5.9	15	24	58
April	45.3	40.0	253	5.3	13	21	52
May	45.6	37.0	234	8.6	23	37	85
June	42.2	31.0	196	11.2	36	57	111
July	44.4	28.5	180	15.9	55	87	158
August	44.0	36.0	228	8.0	22	35	79
September	42.5	35.0	222	7.5	21	33	74
October	42.6	37.0	234	5.6	15	24	55
November	42.5	42.0	266	.5	1	1.6	4
December	42.7	42.0	266	.7	2	3.1	6
1920.							
January	43.3	37.0	234	6.3	17	2.7	62
February	43.4	37.0	234	6.4	17	2.7	63
March	42.4	34.0	215	8.4	24	38	83
April	45.8	34.0	215	11.8	34	54	117
May	44.3	33.0	209	11.3	34	54	112
June	47.6	33.0	209	14.6	44	70	145
July	52.9	43.0	272	9.9	23	37	98
August	51.4	43.0	272	8.4	19	30	83
September	51.0	40.5	256	10.5	25	40	104
October	50.1	41.0	260	9.1	22	35	90
November	.....	.....	.....	.....	.....	.....	.....
December	42.9	30.0	190	12.9	43	68	128
1921.							
January	43.9	30.0	190	13.9	46	73	138
February	40.3	28.0	177	12.3	44	70	122
March	41.7	27.5	174	14.2	51	81	141
April	42.0	30.0	190	12.9	43	68	128

Digitized by Google

SIRLOIN STEAK AND STEER LOIN ENDS (CHICAGO).

Table L–5 gives the retail price of sirloin steak and the actual and relative wholesale price of steak loin ends per pound at Chicago, the price differential, the per cent of the wholesale price taken by the retailer, the relative increase in percentage of the wholesale price taken by the retailer, and the relative retail differential by months from January, 1919, to April, 1921.

TABLE L–5.—*Wholesale and retail price of sirloin steak at Chicago, 1919–1921.*

[Monthly Labor Review, Bureau of Labor Statistics.]

	Sirloin steak, retail, per pound.	Steer, loin ends, wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in percentage of wholesale price taken by retailer, 1913=100.	Relative retail differential, 1913=100.
	Cents.	*Cents.*		*Cents.*			
1913 average	23.2	16.8	100	6.4	38	100	.....
1919.							
January	37.5	32.0	190	5.5	17	45	86
February	37.9	32.0	190	5.9	18	47	92
March	38.0	34.0	202	4.0	11	29	63
April	39.7	32.0	190	7.7	24	63	120
May	39.5	32.0	202	7.5	23	61	117
June	38.5	26.0	155	12.5	48	126	195
July	39.3	37.0	161	12.3	45	118	192
August	41.1	32.0	190	9.1	28	74	142
September	38.4	33.0	196	5.4	16	42	84
October	36.6	33.0	196	3.6	11	29	56
November	37.0	32.0	190	5.0	15	40	78
December	35.9	32.0	190	3.9	12	32	61
1920.							
January	37.2	32.0	190	5.2	16	42	81
February	37.2	30.0	179	7.2	24	63	112
March	39.4	32.0	190	7.4	23	61	116
April	40.9	32.0	190	8.9	27	71	140
May	41.0	32.0	190	9.0	28	74	141
June	44.4	32.0	190	12.4	38	100	194
July	47.8	36.0	214	11.0	33	84	184
August	47.4	36.0	214	11.4	31	82	178
September	48.4	38.3	226	10.4	27	71	163
October	47.3	40.0	238	7.3	18	47	114
November							
December	40.9	38.0	226	2.0	7.6	2	45
1921.							
January	40.2	34.0	202	6.2	18	31	97
February	36.2	27.0	161	9.2	34	89	144
March	38.6	28.0	167	10.6	37	97	166
April	38.4	28.0	167	10.4	37	97	163

The percentage of the wholesale price of steer loins taken by the retailer in sirloin steak has varied widely but tended to remain fairly constant in about the same level as in 1913 with the exception of the last four months of 1919, when retail prices declined faster than wholesale prices. The actual differential, however, has increased markedly, though not in proportion to the increase in the wholesale price.

Digitized by Google

Tables L–6 and L–7 show the wholesale and retail price per pound of round steak and beef loins No. 2, by months, from January, 1919, to April, 1921, the difference between wholesale price and the retail price, the percentage of the wholesale price taken by the retailer, and the relative price differential in New York and Chicago.

TABLE L–6.—*Wholesale and retail price of round steak at New York, 1919–1921.*

[Monthly Labor Review, Bureau of Lobor Statistics.]

	Round steak No. 7 retail, per pound.	Beef, No. 2 loins, wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in percentage of wholesale price taken by retailer, 1913=100.	Relative retail differential, 1913=100.
	Cents.	*Cents.*		*Cents.*			
1913 average	24.9	12.1	100	12.8	105	105	.....
1919.							
January	47.3	25.0	207	22.3	89	85	174
February	46.9	24.0	198	22.9	95	90	179
March	46.8	24.0	198	22.8	95	90	178
April	47.0	24.0	198	23.0	96	91	180
May	46.9	24.0	198	22.9	95	90	179
June	44.4	22.0	182	22.4	102	97	175
July	46.2	22.0	182	24.2	110	105	189
August	45.6	24.0	198	21.6	90	86	169
September	44.4	22.0	182	22.4	102	97	175
October	44.5	22.0	182	22.5	102	97	176
November	44.4	22.0	182	22.4	102	97	175
December	44.5	21.0	174	23.5	112	107	184
1920.							
January	44.6	21.0	174	23.6	112	107	184
February	44.4	20.0	165	24.4	122	116	191
March	43.1	19.0	157	24.1	127	121	188
April	46.4	20.5	169	25.9	126	120	202
May	45.0	22.0	182	23.0	105	100	180
June	47.6	21.0	174	26.6	127	121	208
July	52.9	30.0	248	22.9	76	72	179
August	51.7	25.0	207	26.7	107	102	209
September	51.2	25.0	207	26.2	105	100	205
October	50.3	23.0	190	27.3	119	113	213
November							
December	42.5	16.0	132	26.5	166	158	207
1921.							
January	43.6	16.0	132	27.6	173	165	216
February	39.9	15.0	124	24.9	166	158	195
March	40.7	15.5	128	25.2	163	155	197
April	41.9	15.5	128	26.4	170	162	206

Digitized by Google

TABLE I–7.—*Wholesale and retail price of round steak at Chicago, 1919–1921.*

[Monthly Labor Review, Bureau of Labor Statistics.]

	Round steak, retail, per pound.	Steer, rounds No. 2, wholesale.	Relative wholesale, 1913=100.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in percentage of wholesale price taken by retailer, 1913=100.	Relative retail differential, 1913=100.
	Cents.	*Cents.*		*Cents.*			
1913 average	20.2	13.1	100	7.1	54	100	.....
1919.							
January	34.0	22.0	168	12.0	54	100	169
February	34.4	22.0	168	12.4	56	104	175
March	34.4	23.0	176	11.4	49	91	161
April	35.7	24.0	183	11.7	48	89	165
May	36.0	25.0	191	11.0	44	82	155
June	34.6	22.0	168	12.6	57	105	177
July	35.5	22.0	168	13.5	61	113	190
August	36.1	25.0	191	11.1	44	82	156
September	34.1	23.0	176	11.1	48	89	156
October	32.5	21.0	160	11.5	54	100	162
November	32.5	18.5	141	14.0	75	139	197
December	31.7	20.0	153	11.7	58	107	165
1920.							
January	32.0	20.0	153	12.0	60	111	169
February	31.8	20.0	153	11.8	59	109	166
March	33.7	19.0	145	14.7	77	143	207
April	34.6	19.0	145	15.6	82	152	220
May	34.7	19.0	145	15.7	82	152	221
June	37.8	21.0	160	16.8	80	148	237
July	40.9	29.0	221	11.9	41	76	168
August	39.8	26.0	198	13.8	53	98	194
September	40.0	24.0	183	16.0	66	122	225
October	39.0	20.0	153	19.0	95	176	268
November							
December	34.0	17.0	130	17.0	100	185	239
1921.							
January	32.7	16.0	122	16.7	104	193	235
February	29.3	14.0	107	15.3	109	202	215
March	30.7	14.0	107	16.7	119	220	235
April	31.2	16.0	122	15.2	95	176	214

The margin of the retailer, as shown by these tables, has not only increased but has increased in percentage of the wholesale price, particularly during the period beginning with August, 1920, when wholesale prices began to decline rapidly. On the average, in 1913 the price of steer rounds No. 2 was 13.1 cents per pound and the retail price of round steak 20.2 cents and the price differential 7.1 cents, or 54 per cent of the wholesale price. In March, 1921, the wholesale price was 14 cents, the retail price 30.7, the retail margin 16.7, or 119 per cent of the wholesale price, or more than double what it was in 1913

Digitized by Google

LARD.

Table L–8 is the retail and actual and relative wholesale price of lard at New York, the difference between the wholesale and retail price, the per cent of the wholesale price taken by the retailer, the relative per cent of the wholesale price taken by the retailer, and the relative price differential by months from January, 1919, to April, 1921.

TABLE L–8.—*Wholesale and retail prices of lard at New York, with price differential and relative price differential, 1919–1921. (Average differential of 1913=100.)*

[Monthly Labor Review, Bureau of Labor Statistics.]

Years and months.	Lard, pure tub, retail.	Lard, prime contract, wholesale.	Relative wholesale.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in percentage of wholesale price taken by retailer.	Relative price differential, 1913=100.
	Cents.	*Cents.*		*Cents.*			
1913 average	16.0	11.1	100	4.9	45	100	
1919.							
January	33.1	24.2	218	8.9	36	80	178
February	31.8	25.3	228	6.5	25	56	130
March	33.7	28.1	253	5.6	19	42	112
April	36.0	31.2	281	4.8	15	33	96
May	38.7	34.1	307	4.6	13	29	92
June	41.3	34.7	313	6.6	39	87	132
July	42.5	35.8	322	6.7	18	40	134
August	41.6	32.0	355	9.6	30	67	192
September	38.3	26.6	240	11.7	44	98	234
October	35.7	29.0	261	6.7	23	51	134
November	36.3	26.8	241	9.5	35	78	190
December	34.3	23.6	213	10.7	45	100	214
1920.							
January	33.8	24.5	221	9.1	37	82	186
February	32.9	20.8	252	12.1	58	129	242
March	31.2	21.1	190	10.1	47	104	202
April	30.4	19.3	174	11.1	57	127	222
May	29.7	21.5	194	8.2	38	84	164
June	29.4	20.6	186	8.8	42	93	176
July	29.2	19.6	177	9.6	48	107	192
August	28.1	19.1	172	9.0	47	104	180
September	28.1	20.5	185	7.6	37	82	152
October	30.1	20.6	186	9.5	46	102	190
November							
December	25.8	14.4	130	11.4	79	176	228
1921.							
January	22.7	13.6	123	9.1	67	149	182
February	20.9	12.5	113	8.4	67	149	168
March	19.9	12.3	111	7.6	62	138	152
April	19.1	10.5	95	8.6	81	180	172

It appears from this table that the margin of the retailer tended to decline as the price of lard rose and to rise as the price of lard came down. On the average of 1913, the wholesale price of lard was 11.1 cents, the retailer's margin 4.9 cents or 45 per cent of the wholesale price. In April, 1921, the retail price was 19.1 cents per pound, the wholesale price 10.5 cents, and the retailer's margin 8.6 cents or 81 per cent of the wholesale price. In other words, the wholesale price in April, 1921, was lower than the average wholesale price in 1913, but the retailer's margin was 3.7 cents greater or about 80 per cent.

Digitized by Google

BUTTER.

The following tables, L–9 and L–10, give the wholesale and retail price per pound of butter at New York and Chicago by months from January, 1919, to April, 1921; the difference between the wholesale price and the retail price; the percentage of the wholesale price taken by the retailer; the relative increase of the percentage taken by the retailer, and the relative price differential:

TABLE L–9.—*Wholesale and retail prices of butter at New York, with the price differential and the relative price differential, 1919–1921. (Average differential 1913=100.)*

[Monthly Labor Review, Bureau of Labor Statistics.]

	Butter, creamery, extra, retail.	Butter, creamery, extra, wholesale.	Relative wholesale (1913=100).	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer (1913=100).	Relative retail differential (1913=100).
1919.	*Cents.*	*Cents.*		*Cents.*			
January	75.5	67.0	207	8.5	12.6	69	144
February	58.1	49.8	154	8.3	16.6	91	141
March	67.3	59.5	184	7.8	13.1	72	132
April	72.9	62.5	194	10.4	16.6	91	176
May	67.2	58.0	180	9.2	15.8	87	156
June	61.4	52.3	162	9.1	17.3	95	154
July	61.3	51.0	158	10.3	20.1	110	175
August	63.0	54.0	167	9.0	16.6	91	153
September	65.3	58.3	180	7.0	12.0	66	119
October	72.4	66.8	207	5.6	8.3	46	95
November	77.9	69.5	215	8.4	12.0	66	142
December	80.6	73.5	228	7.1	9.6	53	120
1920.							
January	75.2	63.8	198	11.4	17.8	98	193
February	75.6	67.0	207	8.6	12.8	70	146
March	75.1	65.8	204	9.3	14.1	78	158
April	80.0	75.0	232	5.0	6.6	36	84
May	70.6	59.3	184	11.3	19.0	104	192
June	65.5	57.0	176	8.5	14.8	81	144
July	66.9	57.4	178	9.5	16.5	91	161
August	64.8	55.5	172	9.3	16.7	92	158
September	67.6	58.0	180	9.6	16.5	91	163
October	69.9	61.0	189	8.9	14.5	80	251
November							
December	63.0	54.3	168	8.7	16.0	188	147
1921.							
January	63.4	53.8	167	9.6	17.8	98	163
February	54.7	43.3	134	11.4	26.3	144	193
March	56.8	46.4	144	10.4	22.4	123	176
April	57.2	49.4	153	7.8	15.7	86	132

Digitized by Google

TABLE I–10.—*Wholesale and retail prices of butter at Chicago with the price differential and the relative price differential, 1919–1921. (Average differential, 1913=100.)*

[Monthly Labor Review, Bureau of Labor Statistics.]

	Butter, creamery, extra, retail.	Butter, creamery, extra, wholesale.	Relative wholesale (1913=100).	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer (1913=100).	Relative retail differential (1913=100).
1919.	*Cents.*	*Cents.*		*Cents.*			
January	71.3	66.0	213	5.3	8.0	48	102
February	53.5	45.5	147	8.0	17.5	105	154
March	63.9	59.8	193	4.1	6.8	41	79
April	67.1	61.0	197	6.1	8.9	53	117
May	62.4	55.5	179	6.9	12.4	74	133
June	57.5	51.5	166	6.0	11.6	69	115
July	57.1	52.0	168	5.1	9.8	59	98
August	58.4	53.0	171	5.4	10.1	61	104
September	60.3	55.3	178	5.0	9.0	54	96
October	67.8	65.3	211	4.3	6.5	39	83
November	73.6	67.8	219	5.8	8.5	51	111
December	74.4	71.8	232	2.6	3.6	22	50
1920.							
January	69.0	62.0	200	7.0	11.2	67	135
February	66.4	59.0	190	7.4	12.5	75	142
March	73.9	65.5	211	8.4	12.8	77	162
April	71.0	60.0	194	11.0	18.3	110	212
May	66.1	57.5	185	8.6	14.9	68	165
June	61.1	53.8	174	7.3	13.5	81	140
July	62.9	55.5	179	7.4	13.3	80	142
August	61.4	54.0	174	7.4	13.7	82	142
September	63.4	56.0	181	7.4	13.2	79	142
October	63.3	58.0	187	5.3	9.1	55	102
November							
December	56.5	49.0	158	7.5	15.3	92	144
1921.							
January	56.2	48.5	156	7.8	16.0	98	150
February	52.3	45.0	145	7.3	16.2	144	140
March	53.8	45.5	147	8.3	18.2	123	160
April	53.5	46.0	148	7.5	16.3	86	144

The retail margins, in Chicago, on butter have been comparatively smaller than in New York. There has, however, been the same tendency for these margins to increase as prices of butter have fallen.

Digitized by Google

BACON.

Table L–11 gives the retail price of sliced bacon and the actual and relative wholesale price of bacon at Chicago, the differential between the wholesale and retail price, the percentage of the wholesale price taken by the retailer, the relative increase or decrease in the percentage of the wholesale price taken by the retailer, and the relative price differential by months from January, 1919, to April, 1921.

TABLE L–11.—*Wholesale and retail prices of bacon, at Chicago, with price differential and relative price differential, 1919–1921. (Average differential 1913=100.)*

[Monthly Labor Review, Bureau of Labor Statistics.]

Year and month.	Bacon, sliced, retail.	Bacon, short, clear sides, wholesale.	Relative wholesale.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the per centage of wholesale prices taken by retailer (1913=100).	Relative price differential (1913=100).
	Cents.	*Cents.*		*Cents.*			
1913 average	29.4	12.7	100	16.7	131	.....	.....
1919.							
January	61.6	29.4	232	32.2	109.5	84	193
February	57.1	27.3	215	29.8	109.0	84	178
March	57.1	29.3	231	27.8	94.8	73	166
April	58.2	32.6	257	25.6	78.5	60	153
May	59.7	33.4	263	26.3	78.7	60	157
June	59.7	32.9	259	26.8	81.4	62	172
July	61.5	33.9	267	28.4	83.7	64	158
August	61.7	33.4	263	28.3	84.7	65	169
September	58.6	28.6	225	30.0	104.8	80	180
October	54.6	23.3	183	31.3	134.2	102	187
November	54.2	23.1	182	31.1	134.5	103	186
December	52.7	24.1	190	28.6	118.6	91	171
1920.							
January	53.1	21.6	170	31.5	145.8	111	189
February	53.9	22.6	178	31.3	138.4	105	187
March	54.6	20.9	165	33.7	161.2	123	202
April	56.4	21.6	170	34.8	161.1	123	208
May	57.1	21.6	170	35.5	164.3	125	213
June	59.1	21.4	169	27.7	176.1	134	226
July	60.1	20.6	162	39.5	191.7	146	237
August	60.3	20.3	160	40.0	197.0	150	240
September	60.1	19.6	154	40.5	206.0	157	243
October	59.4	21.1	166	38.3	181.5	139	229
November	.....	.....	.....	.....	.....	.....	.....
December	51.1	17.1	135	34.0	198.8	152	204
1921.							
January	50.7	12.8	101	37.9	296.0	226	227
February	50.4	14.6	115	35.8	245.2	187	214
March	51.6	15.4	121	36.2	235.0	179	217
April	52.2	15.2	120	37.0	243.4	185	222

The margins taken by the retailer on bacon have markedly increased as the wholesale price declined during this period. The retailer's margin has increased both in percentage of the wholesale price and in actual figures as the wholesale price of bacon has fallen.

The consumer has received but a relatively small proportion of the decline in the wholesale price. With the wholesale price in January, 1921, only one-tenth of a cent higher than the average wholesale price in 1913, the retailer's margin was more than double of what it was in 1913 and is apparently 296 per cent of the wholesale price.

Digitized by Google

Table L–12 gives the actual retail and the actual and relative wholesale price of ham in Chicago, the price differential or margin of the retailer, the per cent of the wholesale price taken by the retailer, the relative percentage of the wholesale price taken by the retailer, and the relative price differential from January, 1919, to April, 1921.

TABLE L–12.—*Wholesale and retail prices of ham at Chicago, with price differential and relative price differential 1919–1921. (Average differential 1913=100.)*

[Source: Monthly Labor Review, Bureau of Labor Statistics.]

Years and months.	Ham, sliced, retail.	Ham, smoked, wholesale.	Relative wholesale.	Price differential.	Per cent of wholesale price taken by retailer.	Relative increase in the percentage of wholesale price taken by retailer, (1913 =100).	Relative price differential, (1913 =100).
1913 average	26.6	16.6	100	10.0	60	100	.....
1919							
January	55.3	35.3	212	20.0	56	93	200
February	52.1	33.8	203	18.3	54	90	183
March	50.8	33.3	200	17.3	52	87	175
April	54.6	35.3	212	19.3	54	90	193
May	56.6	37.5	226	19.1	51	85	191
June	57.3	38.0	229	19.3	51	85	193
July	58.8	38.3	230	20.5	53	88	205
August	59.8	38.3	230	21.5	56	93	215
September	57.9	35.0	211	22.9	65	108	229
October	54.0	29.3	176	26.7	91	152	267
November	52.3	28.9	174	23.4	81	135	234
December	51.4	28.9	174	22.5	77	128	225
1920							
January	51.8	28.9	174	22.9	79	132	229
February	51.9	30.3	182	21.6	71	118	216
March	53.1	30.5	184	22.6	74	123	226
April	55.6	32.5	196	23.1	71	118	231
May	56.0	36.0	217	20.0	55	92	200
June	58.5	36.5	220	22.0	60	100	220
July	61.3	37.5	226	23.8	63	105	238
August	61.9	37.5	226	24.4	65	108	244
September	62.3	36.1	217	26.2	72	120	262
October	61.9	35.8	215	26.1	72	120	261
December	52.3	26.5	159	25.8	97	162	258
1921							
January	51.2	24.5	147	26.7	109	182	267
February	51.0	26.3	158	24.7	93	155	247
March	51.8	27.8	167	24.0	86	143	240
April	51.7	27.8	167	23.9	86	143	239

Retail margins on ham have tended to increase and were very much greater in April, 1921, than in 1913, and also greater than they were in the early part of 1919. Retail margins have come up as wholesale prices have come down.

In the consideration of these figures it should be remembered that they do not purport to indicate the profit made by the retailer on sale of the various commodities indicated. They are intended to indicate the margins taken by the retailer in recent years compared with margins taken in 1913. The larger margins indicated in the recent period may be fully covered by additional and legitimate costs. The accuracy of the retail margins shown in the preceding tables are disputed by the trade. The commission at this time does not have sufficient comprehensive data to warrant it in expressing an opinion upon this question. It is making an investigation which it hopes will develop facts upon which an accurate conclusion can be based. These facts will be made public at a later date.

Digitized by Google

67TH CONGRESS
1st Session
HOUSE OF REPRESENTATIVES
REPORT
No. 408.

CREDIT

REPORT OF THE JOINT COMMISSION OF AGRICULTURAL INQUIRY

IN FOUR PARTS

PART II

SUBMITTED BY MR. ANDERSON

OCTOBER 14, 1921.—Ordered to be printed with illustrations

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

Digitized by Google

HARVARD COLLEGE LIBRARY
FROM THE
PRESIDENT'S OFFICE
Oct. 5, 1922

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

UNITED STATES CONGRESS.

HOUSE MEMBERS.	SENATE MEMBERS.
SYDNEY ANDERSON, Minnesota, *Chairman.*	IRVINE L. LENROOT, Wisconsin.
OGDEN L. MILLS, New York.	ARTHUR CAPPER, Kansas.
FRANK H. FUNK, Illinois.	CHARLES L. McNARY, Oregon.
HATTON W. SUMNERS, Texas.	JOSEPH T. ROBINSON, Arkansas.
PETER G. TEN EYCK, New York.	PAT HARRISON, Mississippi.
IRVING S. PAULL, *Secretary.*	CLYDE L. KING, *Economist.*

Digitized by Google

CONTENTS.

	Page.
Introduction	7
Summary	7
Chapter 1.—The Federal reserve system	16
Chapter 2.—The operations of Federal reserve system related to economic periods	27
Chapter 3.—Policy of the Treasury in financing Government loans in relation to the Federal reserve policy	80
Chapter 4.—Federal reserve policy in 1920	85
Chapter 5.—Federal reserve policy as indicated by a comparison of interest rates on certificates of indebtedness, bank acceptances, commercial paper, and discount rates	121
Chapter 6.—Earnings of Federal reserve banks as related to Federal reserve policies	129
Chapter 7.—Movement of funds in and out of New York City	133
Chapter 8.—Defects and deficiencies of the banking machinery	146
Chapter 9.—Statistical tables showing movement of money and credit	151
Chapter 10.—Minority opinion of Ogden L. Mills	158

LIST OF TABLES.

	Page.
1.—Principal items showing development of Federal reserve system for selected dates from its organization to September 14, 1921	27
2.—Price indices of commodities from November, 1914, to April, 1917	30
3.—Open-market and official bank discount rates	32
a. England.	
b. France.	
c. Germany.	
d. Italy.	
e. Switzerland.	
f. Holland.	
g. Belgium.	
h. Austria.	
i. Japan.	
4.—Price indices of commodities of August, 1918, as compared with April, 1917.	36
5.—Preliminary financial statement of the United States Government for the period from April 6, 1917, to June 30, 1921	38
5*a*.—Statement showing classified receipts of the United States Government exclusive of the principal of the public debt, by months from April 6, 1917, to June 30, 1921, as published in daily Treasury statements	39
5*b*.—Statement showing classified disbursements of the United States Government exclusive of the principal of the public debt, by months from April 6, 1917, to June 30, 1921, as published in daily Treasury statements	40
6.—Price indices of commodities showing decline from August, 1918, to February, 1919	41
7.—Price indices of commodities showing rise from March, 1919, to May, 1920	42
8.—Changes in discount rates on commercial paper maturing within 16 to 90 days, 1919–20	47
9.—Changes in discount rates on paper secured by Liberty bonds and Victory notes maturing within 16 to 90 days, 1919–20	47
10.—Monthly average of three loans (4¼s), second, third, and fourth	48
11.—Total holdings of discounted bills compared with holdings of discounted bills secured by Government war obligations (January, 1920, to May 1921)	49

Digitized by Google

Page.

12.—Number of banks in each district accommodated through discount operations and number of nonborrowing banks..... 52
13.—Price indices of commodities showing decline from June, 1920, to June, 1921..... 54
14.—Imports and exports of gold, 1914–1920..... 55
15.—Rediscount transactions with other Federal reserve banks, April, 1919, to Dec. 31, 1920..... 59
16.—Comparison progressive rates versus 7 per cent flat rate..... 60
17.—Federal Reserve Bank of Kansas City—Loans to member banks, classified by States—Basis, 30th of each month—April, 1920, to July, 1921..... 64
a. Loans to Colorado member banks.
b. Loans to Kansas member banks.
c. Loans to Missouri member banks.
d. Loans to Nebraska member banks.
e. Loans to New Mexico member banks.
f. Loans to Oklahoma member banks.
g. Loans to Wyoming member banks.
18.—Recapitulation, tenth district..... 66
19.—Statement showing per cent of increase or decrease of basic line and amount borrowed as of June 30, 1920, against June 30, 1921..... 69
20.—Recapitulation by districts..... 70
a. Fifth district.
b. Sixth district.
c. Seventh district.
d. Ninth district.
e. Tenth district.
f. Eleventh district.
21.—Assets and liabilities of Federal reserve bank and reporting member banks, April, 1917–June, 1921..... 82
22.—Loans and discounts of all banks in the United States on June 30 of each year..... 92
23.—Loans and discounts of all banks in the United States—Ratio of 1916, 1918, and 1920 to 1914..... 93
24.—Loans and discounts of State and national banks in various States..... 94
25.—Comparison of loans and discounts in certain city and country banks..... 95
26.—Loans and discounts of all banks in 10 agricultural counties of each of 4 States..... 95
27.—Estimated amount of bank loans to farmers in the United States outstanding on July 1, 1918, and Dec. 31, 1920, with total loans and discounts for comparison..... 97
28.—Comparison of per cent of increase of farm mortgage and short-time loans and per cent of increase of all loans and discounts, 1918–1920..... 99
29.—Increase or decrease in loans, borrowings, and deposits of member banks, 1920–21..... 102
30.—Increase or decrease in loans and in borrowings from Federal reserve banks by districts, 1920–21..... 103
31.—Borrowings from Federal reserve banks, compared with "basic line" on April 28, 1921..... 104
32.—Loans and discounts..... 104
a.—Federal reserve district No. 1—Boston.
b.—Federal reserve district No. 2—New York.
c.—Federal reserve district No. 3—Philadelphia.
d.—Federal reserve district No. 4—Cleveland.
e.—Federal reserve district No. 5—Richmond.
f.—Federal reserve district No. 6—Atlanta.
g.—Federal reserve district No. 7—Chicago.
h.—Federal reserve district No. 8—St. Louis.
i.—Federal reserve district No. 9—Minneapolis.
j.—Federal reserve district No. 10—Kansas City.
k.—Federal reserve district No. 11—Dallas.
l.—Federal reserve district No. 12—San Francisco.
33.—Time deposits..... 116
34.—Decrease of demand deposits from May 4, 1920, to April 28, 1921..... 117
35.—Amount of agricultural paper and other classes of discounted bills held by the Federal reserve banks in the industrial, cotton, and agricultural and live-stock sections..... 118

Digitized by Google

Page.

36.—Discount rate of the Federal Reserve Bank of New York on 60–90 day commercial paper and market rate on 4 to 6 months' commercial paper in New York 124
37.—Market rate on 90-day bank bills in London and the minimum rate of the Bank of England 126
38.—Official discount rates of foreign State banks, 1919–1921 127
39.—Official discount rates of central banks, 1919–1921 127
40.—Profit-and-loss account of each Federal reserve bank for 1920 130
41.—Percentage decline from maximum 135
42.—Balances of out-of-town correspondents and street loans placed for their account, daily reporting banks New York City 137
43a.—Gold settlement fund transactions, January to June, inclusive, 1920 138
43b.—Gold settlement fund transactions, July to December, inclusive, 1920 138
43c.—Gold settlement fund transactions, January 1, 1921–July 20, 1921 139
44a.—Loans to correspondents located outside second district and loans and investments of daily reporting banks 140
44b.—Deposits of correspondents located outside of second district and total borrowings from Federal reserve bank 150
45.—Street loans, New York City daily reporting banks 141
46.—Per cent of increase from year to year in Federal reserve notes in circulation, general stock of money in United States, gold in excess of reserves required, total bills discounted and bills bought, loans and discounts, and deposits, 1913 to 1921 152
47.—Statistics of money and credit, 1914–1921 154

LIST OF CHARTS.

Page.

A.—Course of the prices of Liberty bonds compared with British war bonds, railroad bonds, and industrial bonds 50
B.—Bank loans and prices in the United States 51
C.—Absorption of credit, 1920 57
D.—Distribution of credit, 1920 ..... facing .. 57
E.—Average rates of discount, 1920–21 63
F.—Ratio of member bank borrowings from Federal reserve banks to total basic discount line of all members 79
G.—Certificates of indebtedness outstanding in the United States and amount held by reporting banks 84
H.—Reserve percentages Federal reserve banks 90
I.—Agricultural and industrial liquidation, May 4, 1920, to April 28, 1921 102
J.—Ratio of member bank borrowings from Federal reserve banks to total basic discount line of all members for agricultural, semiagricultural, and non-agricultural counties, March 4, 1920, and April 28, 1921 115
K.—Discount rates of the Federal Reserve Bank of New York and the market rates on different types of paper 122
L.—Interest rate of certificates of indebtedness at issuance and rate of the Federal Reserve Bank of New York on advances secured by certificates of indebtedness 123
M.—Discount rate of the Federal Bank of New York and the market rate on commercial paper 124
N.—Minimum discount rate of the Bank of England and the market rate on 90-day bills in London, 1914–1921 125
O.—Minimum discount rate of the Bank of England and the market rate on 90-day bills in London, 1900–1920 126
P.—Bank deposits in New York City and outside 134
Q.—Loans of reporting banks in New York City and the United States 135
R.—Out-of-town funds with 52 New York City banks 136
S.—Street loans of New York City banks and the call loan rate (distributed between loans for own account and loans for correspondents' account) 141
T.—Street loans of 52 New York City banks 143
U.—Street loans of New York City banks and the call loan rate 144
V.—Loans of reporting banks in the United States and street loans of New York City banks 145

Digitized by Google

Digitized by Google

CREDIT—REPORT OF THE JOINT COMMISSION OF AGRICULTURAL INQUIRY.

INTRODUCTION.

The Senate concurrent resolution 4 which created the Joint Commission of Agricultural Inquiry, requires the commission to investigate and report to Congress upon the following subjects:

1. The causes of the present condition of agriculture.
2. The cause of the difference between the prices of agricultural products paid to the producer and the ultimate cost to the consumer.
3. The comparative condition of industries other than agriculture.
4. The relation of prices of commodities other than agricultural products to such products.
5. The banking and financial resources and credits of the country, especially as affecting agricultural credits.
6. The marketing and transportation facilities of the country.

This report deals with the fifth subdivision of the subjects of investigation under the resolution, namely, the banking and financial resources and credits of the country, especially as affecting agricultural credits. The commission believes that a thorough understanding of the fundamental principles underlying the operations of the Federal reserve system and the banking machinery of the country is essential to any well-designed plan for its improvement and has therefore undertaken in this report to outline the machinery of the banking system of the country and the operations of the Federal reserve system and its relation to Treasury policy in considerable detail.

SUMMARY.

The debacle of prices in 1920 and 1921 reduced the farmer to a condition worse than he has suffered under for 30 years. Prices of farm products are relatively far below the prices of other groups of commodities. The products the farmer has to sell will buy less of the products the farmer has to buy to-day than at any time in the last two decades. Farm indebtedness has doubled in the last 10 years, and the drop in prices has the effect of again doubling this indebtedness. Farmers are having the greatest difficulty in paying the debts incurred in producing the crops of 1920 and in securing credit necessary for new production.

The commission believes that these difficulties are due in a measure to the credit restrictions and limitations of the past 18 months, and in part to the fact that the banking machinery of the country is not adequately adapted to the farmer's requirements.

Digitized by Google

The present banking system consists of the Federal Reserve System, including about 8,210 national banks; the State banking systems, which include about 20,000 State banks, of which 1,630 are members of the Federal Reserve System; the Farm Loan System, with its farm loan bank in each State; the joint stock land banks, of which there are 22; the farm loan associations, which are part of the Federal Farm Loan System, and private farm mortgage and cattle loan companies.

The National and State banking systems are the principal agencies furnishing short-time credit to the farmer. These State and National banks, together with the Federal Farm Loan System and the private farm mortgage companies, also furnish the great bulk of the long-time credit to farmers. Short-time credits, however, are largely limited to credits for periods of six months or less, owing to the fact that paper of longer maturity than six months for agricultural purposes is not eligible for rediscount with the Federal reserve banks. Longer time credit can only be secured on the basis of farm mortgages, and, even if it were possible to do so, it would not be wise to make farm mortgages the basis of credit for production or marketing purposes.

It is evident that there is a gap between the short and long time credit furnished by these banking agencies which should be filled in some way.

The commission believes that the credit problem of the farmer can best be met by adapting existing banking agencies to his credit requirements. In meeting these requirements there is no reason why, without destroying their utility for the purposes for which they were originally created, all of the banking agencies of the country can not be used by adapting them to the farmers' requirements. These requirements are for credit of sufficient maturity to make payment possible out of the proceeds of the farm. This means a credit running from six months to three years, depending upon the character of the commodities to be produced and marketed. In the case of crops six months may be in some instances sufficient, but in the case of live stock three years may be required.

The commission proposes to meet these requirements by authorizing any Federal land bank through a separate department created in it under restrictions, limitations, conditions, and regulations adopted by the Farm Loan Board to rediscount paper on which money has been advanced to or used by the farmer for agricultural purposes having a maturity of not less than six months or more than three years at rates of discount to be fixed by the Farm Loan Board for any incorporated national bank, State bank, trust company, savings institution, or live-stock loan company. In addition the commission deems it desirable to permit the Federal land banks to make loans direct to cooperative associations of farmers organized under State laws for the purpose of marketing staple agricultural products when such loans are secured by warehouse receipts upon such products.

The notes or obligations representing loans or discounts by the Federal land banks are to be converted into short-time debentures and sold to the public in the same way as farm-loan bonds are now sold.

It is proposed further that notes taken or discounted by a Federal land bank shall be eligible for rediscount with any Federal reserve

Digitized by Google

bank, when such loans have reached a maturity of less than six months. In addition, any Federal reserve bank is authorized to buy and sell the debentures issued by the Farm Loan Board to the same extent and in the same way as they now buy and sell farm-loan bonds.

The commission recommends the passage of legislation by Congress substantially in the following form:

A BILL To amend the Federal farm loan act by establishing a farm credits department in each Federal land bank.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when used in this act, the term "Federal farm loan act" means the Federal farm loan act approved July 17, 1916, as amended.

SEC. 2. That section 1 of the Federal farm loan act is amended to read as follows:

"TITLE I.

"SECTION 1. That this act may be cited as the 'Federal farm loan act.' Its administration shall be under the direction and control of the Federal Farm Loan Board, hereinafter created."

SEC. 3. That the Federal farm loan act is amended by adding at the end thereof a new title to read as follows:

"TITLE II.

"SEC. 201. That in addition to the powers granted by Title I, each Federal land bank shall have power—

"(a) Subject solely to such restrictions, limitations, and conditions as may be imposed by the Federal Farm Loan Board (1) to discount for any national bank, State bank, trust company, incorporated live stock loan company, or savings institution, with its indorsement, any note or other such obligation the proceeds of which have been advanced or used in the first instance for an agricultural purpose or for the raising, breeding, fattening, or marketing of live stock, and (2) to make loans direct to any cooperative association organized under the laws of any State and composed of persons engaged in producing staple agricultural products, if the notes or other such obligations representing such loans are secured by warehouse receipts covering such products. Such loans or discounts must have a maturity at the time they are made or discounted by the Federal land bank of not less than six months nor more than three years. Any Federal land bank may in its discretion sell loans or discounts made under this subdivision with or without its indorsement. Rates of interest or discount charged by the Federal land banks upon such loans and discounts shall be subject to the approval of the Federal Farm Loan Board.

"(b) Subject to the approval of the Federal Farm Loan Board, to issue and to sell debentures or other such obligations with a maturity at the time of issue of not more than three years, which shall be secured by a like face amount of cash, or notes or other such obligations discounted or representing loans made under subdivision (a). The provisions of Title I relating to the preparation and issue of farm-loan bonds shall, so far as applicable, govern the preparation and issue of debentures or other such obligations issued under this subdivision; but the Federal Farm Loan Board shall prescribe rules and regulations governing the receipt, custody, and release of collateral securing such debentures or other obligations. Such collateral shall be held separate and distinct from the collateral securing farm loan bonds. Rates of interest upon debentures and other such obligations issued under this subdivision shall, subject to the approval of the Federal Farm Loan Board, be fixed by the Federal land bank making the issue. A Federal land bank may, subject to the approval of the Federal Farm Loan Board, buy in the open market upon its own account and retire at or before maturity any such debentures or obligations issued by it.

"SEC. 202. For the purpose of exercising the powers conferred by this title, each Federal land bank shall establish a separate department to be designated as the farm credits department, for which $1,000,000 in capital shall be subscribed before any of the powers so conferred may be exercised. Capital stock of such amount shall be divided into shares of $5 each and shall be subscribed, held, and paid by the Government of the United States. It shall be the duty of the Secretary of the Treasury to subscribe to such capital stock on behalf of the United States, such subscription to be subject to call in whole or in part by the directors of the Federal land bank upon thirty days' notice to the Secretary of the Treasury and with the approval

Digitized by Google

of the Federal Farm Loan Board. The Secretary of the Treasury is authorized and directed to take out shares as called and to pay for the same out of any money in the Treasury not otherwise appropriated. Capital so allocated to a farm credits department shall be applied solely to meet obligations and losses, if any, incurred in the operation of that department, and the capital subscribed under Title I shall not be applied to meeting obligations or losses, if any, incurred in the operation of any farm credits department.

"SEC. 203. The stock owned by the Government of the United States in any Federal land bank in accordance with section 202, shall receive no dividends. The Government of the United States shall be entitled to one vote for each share of such stock in deciding all questions at meetings of stockholders. Such stock shall be voted by the Farm Loan Commission as directed by the Federal Farm Loan Board.

"SEC. 204. That any Federal reserve bank may rediscount for a Federal land bank upon its indorsement, notes or other such obligations discounted or representing loans made under section 201; except that no Federal reserve bank shall rediscount for a Federal land bank any such note or obligation which has a maturity at the time of discount by the Federal reserve bank in excess of six months or which bears the indorsement of a nonmember State bank or trust company which is eligible for membership in the Federal reserve system in accordance with section 9 of the Federal reserve act approved December 23, 1913, as amended. The rates of discount to be charged by any Federal reserve bank under this section, shall be fixed by the Federal reserve bank, subject to review and determination of the Federal Reserve Board.

"SEC. 205. The farm credits department of any Federal land bank issuing debentures or other such obligations under section 201, shall be primarily liable therefor, and shall also be liable, upon presentation of the coupons for interest payments due upon any such debentures or obligations issued by the farm credits department of any other Federal land bank and remaining unpaid in consequence of the default of the farm credits department of such other Federal land banks. The farm credits department of any Federal land bank shall likewise be liable for such portion of the principal of debentures or obligations so issued as are not paid after the assets of the farm credits department of such other Federal land bank have been liquidated and distributed. Such losses, if any, either of interest or of principal, shall be assessed by the Federal Farm Loan Board against solvent farm credits departments of Federal land banks liable therefor in proportion to the amount of debentures or other such obligations which each may have outstanding at the time of such assessment. Every Federal land bank shall, by appropriate action of its board of directors duly recorded in its minutes, obligate itself to become liable on debentures and other such obligations as provided in this section.

"SEC. 206. Any Federal reserve bank may buy and sell debentures and other such obligations issued by a Federal land bank but only to the same extent as, and subject to the same limitations as those upon which, they may buy and sell farm loan bonds.

"SEC. 207. The net earnings of the farm credits department shall be carried to reserve account to such extent and in such manner, and reserves so established shall be invested as the Federal Farm Loan Board shall by regulation prescribe.

"SEC. 208. In order to enable each Federal land bank to carry out the purposes of this act, the Comptroller of the Currency is hereby authorized and directed, upon the request of any Federal land bank, (a) to furnish for the confidential use of such bank such reports, records, and other information as he may have available relating to financial condition of national banks through or for which the Federal land bank has made or contemplates making discounts, and (b) to make, through his examiners, for the confidential use of the Federal land bank, examinations of State banks, trust companies, incorporated live-stock loan companies, or savings institutions, through or for which the Federal land bank has made or contemplates making discounts or loans: *Provided*, That no such examinations shall be made without the consent of such State bank, trust company, incorporated live-stock loan company, or savings institution. Land bank appraisers are authorized, upon the request of any Federal land bank and with the approval of the Federal Farm Loan Board, to investigate and make a written report upon the products covered by warehouse receipts which are security for notes or other such obligations representing any loan to any cooperative association under subdivision (a) of section 201. Land-bank examiners are authorized, upon the request of any Federal land bank and with the approval of the Federal Farm Loan Board, to examine and make a written report upon the condition of any cooperative association to which the Federal land bank contemplates making any such loan.

Digitized by Google

"SEC. 209. The Federal Farm Loan Board is authorized to make such rules and regulations, not inconsistent with law, as it deems necessary for the efficient execution of the provisions of this title."

SEC. 4. That the first two lines of section 12 of the Federal farm loan act is amended to read as follows:

"SEC. 12. That no Federal land bank organized under this act shall make loans, other than those authorized by Title II, except upon the following terms and conditions."

SEC. 5. That section 23 of the Federal farm loan act is amended by adding at the end thereof a new paragraph to read as follows:

"The provisions of this section shall not apply to the earnings, reserves, and capital stock of the farm credits department of any Federal land bank."

SEC. 6. That section 5202 of the Revised Statutes, as amended, is amended by adding at the end thereof a new paragraph to read as follows:

"Eighth. Liabilities incurred under the provisions of subdivision (a) of section 201 of the Federal farm loan act approved July 17, 1916, as amended."

The foregoing recommendation is based upon a careful analysis of the operations of the Federal reserve system since its inception and the principles which governed or should govern this operation, including the relation of the policy undertaken by the Federal reserve banks and the Federal Reserve Board to the fiscal policies of the Treasury Department. The commission has also carefully considered the policy of the Federal reserve banks and the Federal Reserve Board during the period of the recent crisis, with special reference to the effect of the policy adopted upon agriculture.

The regulation of the volume of credit and currency within the Federal Reserve System is accomplished in part by the automatic operation of the system and in part by the discount policy of the various Federal reserve banks.

The discount rates of Federal reserve banks in accordance with the policy of banks of issue, in almost all of the countries, having a central banking system, should normally be slightly above the rates carried by the class of paper to which they apply, in order that the lending power of the Federal reserve banks may be preserved for times of financial stringency and crisis and in order that this lending power shall not be depleted by member banks borrowing from them for purposes of profit only. The rates of the Federal reserve banks were for the most part above going rates on prime commercial paper from the beginning of the operations of the Federal reserve banks to the date of our entrance into the World War. With our entrance into the World War, the rate policy of the Federal reserve banks was subordinated to the requirements of the Treasury and the Treasury policy of borrowing the funds necessary for the conduct of the war at rates of interest below the market rate, and discount rates thereafter were below the market rates on the character of paper to which they applied.

The cost of the war could not be paid out of collection of current taxes; it was necessary to provide for immediate payments by means of the expansion or manufacture of credit. This manufacture of credit necessitated the use of the lending power of the Federal reserve banks through loans to member banks at a rate of interest below the rate carried by the bond and certificate of indebtedness issues of the Government. This policy induced large borrowings on the part of member banks from Federal reserve banks and larger expansion of loans and discounts of the member banks.

Digitized by Google

The greatest expansion of loans and discounts of all banks occurred in the period from November, 1914, when the Federal reserve banks were organized, and our entrance into the war. During this period loans and discounts of all banks in the country expanded 40 per cent, and in the same period prices increased 75 per cent. During the war period loans and discounts expanded 14 per cent and prices increased 17 per cent. In the post-war period loans and discounts expanded 30 per cent and prices increased 33 per cent.

In the early part of 1919, following a short period of price deflation and business contraction, the question of increasing the discount rates of the Federal reserve banks in the direction of the sounder policy of maintaining these rates above the going rates for commercial paper and above rates on Government bonds and certificates of indebtedness, arose. At this time the Government was considering the flotation of the Victory loan which it was then thought would involve $6,000,000,000. The Treasury Department was unwilling to undertake the flotation of the Victory loan at a rate of interest comparable with commercial rates on account of the possible effect which that action would have upon existing issues of private securities and its possible effect in requiring the refunding of the issues of Government bonds already floated.

The discount policy of the Federal reserve banks was again subordinated to the Treasury policy in securing its credit requirements, although at this time the tendency toward expansion, speculation, and extravagance was beginning to be apparent.

This was clearly the time for a policy of advancing the discount rates of the Federal reserve banks with a view of curtailing the expansion, speculation, and extravagance which was then beginning.

It is the opinion of the commission that a policy of restriction of loans and discounts by advances in the discount rates of the Federal reserve banks could and should have been adopted in the early part of 1919, notwithstanding the difficulties which the Treasury Department anticipated in floating the Victory loan if such a policy were adopted.

It is also the opinion of the commission that had this policy been adopted in the early part of 1919 much of the expansion, speculation, and extravagance which characterized the postwar period could have been avoided.

The commission also believes that had such a policy been adopted in 1919 the difficulties, hardships, and losses which occurred in 1920–21 as a result of the process of deflation and liquidation would have been diminished.

No action in the direction of restriction of expansion, inflation, and speculation by increases in discount rates was taken by the Federal reserve banks or the Federal Reserve Board until December, 1919, when slight advances were made in discount rates, followed in January by more radical advances and by further increases during the remainder of 1920.

In the meantime there began and continued a period of expansion, extravagance, and speculation, the like of which has never before been seen in this country or perhaps in the world.

This era of expansion, speculation, and extravagance resulted in the making of a large volume of debts which was reflected in large increases in the borrowings of the member banks from Federal reserve banks. When finally the Federal reserve banks and the

Digitized by Google

Federal Reserve Board adopted the policy of restriction of expansion of loans and discounts and of speculation and extravagance, loans and discounts, currency and prices had reached such a point that deflation was a process accompanied by perpendicular and very material declines of prices accompanied by great losses and hardship upon banks, communities, and individuals alike.

The reserves of individual reserve banks and of the system as a whole began to dwindle rapidly. In some of the reserve banks the reserves fell as low as 9 per cent, and at one time it is said that the reserves of one of the banks were entirely exhausted. The tremendous drain upon the credit resources of the country brought about the over extension of many of the banks of the country, and with some of these banks loans and discounts had advanced to a point where the banks were utterly unable to loan additional funds to their customers without rendering themselves in great danger of insolvency.

From 1915 to 1920 the ratio of loans and discounts of national banks to capital and surplus had increased from 3.8 to 1 to 5.5 to 1, and in many instances capital and surplus would not permit of further expansion of loans and discounts of banks without endangering the interests of depositors and stockholders alike. The policy of the Federal reserve banks, therefore, during this period underwent a change. Discount rates were raised, particularly upon certificates of indebtedness and Government bonds, resulting in the liquidation of this class of paper by the member banks and the freeing of the funds invested in them for other purposes.

With the exhaustion of the credits of European Governments in this country the purchasing power of Europe in our markets began to fail. This resulted in a sharp decline in exports, particularly of farm products. The exhaustion of credit and capital, coupled with the decline in exports, gave the first impetus to the decline in prices. With the beginning of this decline the forces of reaction and depression began to operate. Goods were thrown on the market, orders were canceled, the buyer's strike developed, unemployment ensued, and complete industrial depression followed.

As the purchasing power of the domestic population diminished and unemployment began, more and more goods began to congest the channels of commerce and more and more credit was required to carry these goods until they could be marketed. It was necessary, by a high level of discount rates, to keep these credit requirements in such a relation to the prices of goods that bank failures would not result and a financial crash increase the inevitable industrial depression resulting from declining prices.

As the pressure of liquidation developed there began to be demands on the part of the public for amelioration of the policy of the Federal reserve banks with respect to discount rates, based upon the assumption that lower discount rates and freer money would arrest the tide of liquidation and reduce the hardships of those who are compelled to sell in a declining market. The commission believes that a policy of lower discount rates and greater liberality in extending credits could have been adopted in the latter part of 1920 and the early months of 1921, and that such a policy would have retarded the process of liquidation and thus spread the losses incident to the inevitable decline of prices to a lower level over a longer period, and that the adoption of such a policy at that time would have been advisable.

Digitized by Google

About one-third of the banks at this period were greatly overextended and it was the position of the Federal Reserve Board that a policy of cheap money at this time, coupled with an invitation to them to further extend themselves and the ratio of loans and discounts to capital, might have resulted in bank failure involving the industrial and commercial institutions and that the Federal Reserve Board and the Federal reserve banks were confronted with a choice between continuing the high discount rates and the consequent pressure and hardship upon the commercial and agricultural industries of the country on the one hand and a policy of lower discount rates involving a possible financial crisis in the midst of an industrial crisis. The Federal reserve banks, with the approval of the Federal Reserve Board, took the first choice, and discount rates were continued upon practically the same level as before.

It seems probable that a change in the policy of the Federal reserve system with reference to discount rates would have accomplished a reversal in part of the psychological and economic factors which at this time were moving in the direction of lower prices, and at the same time would have tended to induce on the part of banks a more liberal attitude toward furnishing additional credit.

It is without doubt true that the pressure of discount rates and of liquidation in the agricultural sections of the country resulted in great hardship, loss, and sacrifice among the agricultural population of the country. The hardships, sacrifices, and losses of the period, however, were not confined to agricultural sections.

The pressure was greater upon the agricultural sections because of the peculiar conditions surrounding the marketing of agricultural crops, and as a result of the fact that the crops of 1920 had been produced at costs greater than those applicable to any other crops in the history of the country. These hardships were also greater because the prices of agricultural commodities declined to a greater degree and with greater rapidity than the prices of other commodities. The investigation of the commission shows that liquidation of bank loans and discounts in the agricultural sections of the country was less than in the industrial sections, and in fact that but little actual liquidation of loans and discounts had taken place in the agricultural sections of the country as a whole up to May, 1921. Certain exceptions should be noted to this general statement. Liquidation of loans and discounts in the Kansas City district in the period of May 4, 1920, to April 28, 1921, amounted to 13 per cent and was substantially as great in the agricultural sections as in the industrial sections. In the Dallas district, loans and discounts in agricultural counties were reduced 6.33 per cent and in nonagricultural counties 12.6 per cent. In the Minneapolis district, loans and discounts were reduced 4.81 per cent in agricultural counties and 12.02 per cent in nonagricultural counties. This does not mean that there was no pressure for liquidation in agricultural loans as well as industrial and commercial loans. It means rather that the prices received by the farmer for the goods he had to sell during this period were not sufficient to liquidate the debts he had made in producing the crop and in extending his plant and operations during the more prosperous period which preceded the crisis. Liquidations in bank loans in the agricultural counties in the Kansas City district were materially larger than in the agricultural counties of the other Federal reserve districts, and this enforced liquidation undoubtedly resulted in the imposition

Digitized by Google

of great hardships and losses from forced sales of farm commodities, particularly in the case of cattle.

The hardships and losses which are inevitably incident to a period of price deflation and business depression were, in the opinion of the commission, increased in the Kansas City district particularly and in the other districts in which the progressive rate was applied and by the application of progressive rates of interest upon borrowing in excess of the basic line of the borrowing banks.

The pressure of the forces of liquidation and depression, however, may be indicated as well by a reduction in deposits as by a reduction in loans and discounts. This pressure in the agricultural sections of the country is exhibited by the fact that the reduction of total deposits (time and demand) in agricultural counties was 11.1 per cent as compared with 5.2 per cent in semiagricultural counties and 4.4 per cent in industrial counties.

Considering demand deposits alone, the reduction was 20.02 per cent in agricultural counties, 13.14 per cent in semiagricultural counties and 10.07 per cent in industrial counties.

It was also contended before the commission that high rates for call money on the stock exchange during this period brought a withdrawal of funds sorely needed by industry and agriculture during this period to New York for purposes of stock speculation. The rates for call money in New York during the period from January, 1920, to June, 1921, were continuously below 10 per cent, with the exception of the period from January to March, 1920.

Beginning with November, 1919, and continuously throughout 1920 and the first half of 1921, the loans of New York banks made on the stock exchange for out-of-town correspondents as well as the balances of country banks with New York banks continuously declined, and an examination of the clearings of the Federal Reserve Bank of New York through the gold settlement fund shows a continuous flow of money on ordinary transactions from the Federal Reserve Bank of New York to other Federal reserve banks during this period. The very great demands for money by industry and agriculture resulted in withdrawal of funds from New York, causing higher interest rates instead of the demands of the stock exchange resulting in a withdrawal of funds from the banks serving industry and agriculture.

The position of Federal reserve banks and the Federal Reserve Board during the period of the war and throughout the business cycle of expansion, extravagance, speculation, deflation, and depression, which followed it, was extremely difficult. The banks were the fiscal agents of the Government. Through them and their auxiliary organizations the enormous issues of war bonds were floated. Their policy was not only interwoven with the policy of the Treasury Department but subordinated to it. The decisions which had to be made were difficult and important. Doubtless in these circumstances mistakes of judgment were made which the clearer judgment of retrospect would change. The commission believes that a policy of sharp advances in discount rates should have been inaugurated in the first six months of 1919, and can not excuse the action of the Federal Reserve Board and the Federal reserve banks in this period in failing to take measures to restrict the expansion, inflation, speculation, and extravagance which characterized the period.

Digitized by Google

Chapter I.

THE FEDERAL RESERVE SYSTEM.

In order to understand the relation of the Federal reserve system to the economic crisis through which the country has just passed and the economic conditions which characterized it, it is necessary, first, to appreciate the organization and function of the system and the relation of the various units of the system to the system as a whole and to each other.

MEMBER BANKS.

For the purpose of establishment of the Federal reserve system the country is divided into 12 Federal reserve districts, determined with due regard to the convenience and customary course of business. All national banks are required to be members of the Federal reserve bank of the district in which they are located, and State banks may be members if they have a capital in amount sufficient to entitle them to become national banks in the place where they are located, and comply in other respects with the requirements of the Federal reserve law. Both state and national banks which become members retain their character as private corporations and are governed under the Federal reserve law only in their relation to the Federal reserve system.

In the principal financial center of each Federal reserve district there is a Federal reserve bank, the management and policy of which is controlled by a board of nine directors, six of whom, known as class A and class B directors, are elected by the member banks, and three of whom, known as class C directors, are appointed by the Federal Reserve Board. The Federal reserve banks, like the member banks, are private corporations, governed and operated by their respective boards of directors and officers, just as any other corporation. They are, however, under the general supervision of a Federal Reserve Board, composed of seven members, of which the Secretary of the Treasury and the Comptroller of the Currency are ex officio members, the other five being appointed by the President and confirmed by the Senate.

Class A directors are representatives of the stockholding banks; class B directors are representatives of the commerce, agriculture, or industry of the district, and may not be officers, directors, or employees of any bank; class C directors are representatives of the Government, and can not be officers, directors, or employees, or stockholders of a bank. For the purpose of election of class A and class B directors, the member banks of each district are divided into three groups, consisting as nearly as possible of banks of similar capitalization. This grouping results in dividing the banks into three classes according to their capital, thus giving equal representation

Digitized by Google

to the large, small, and medium-sized banks in each Federal reserve district. Each bank has one vote, without regard to size. One class C director in each district is designated as Federal reserve agent (the local representative of the Federal Reserve Board) and chairman of the board of directors.

The active management of the Federal reserve bank is vested in a governor and one or more deputy governors, elected by the board of directors. The management and policy of the Federal reserve banks is essentially private and commercial, rather than public and governmental. The public character of the Federal reserve banks rests upon the delegated power of the bank (1) to act as fiscal agent of the Government and (2) to issue currency.

The capital stock of the Federal reserve banks is furnished by the member banks, each of which is required to subscribe to the capital stock of the Federal reserve bank to an amount equal to 6 per cent of its own capital and surplus, one-half of which has been paid in.

The deposits of Federal reserve banks are also furnished by the member banks, each of which is required to maintain a reserve deposit in the Federal reserve bank of which it is a member equal to 13 per cent of its net demand deposits if it is located in a central reserve city, 10 per cent if it is located in a reserve city, and 7 per cent if located in a city which is neither a central reserve city nor a reserve city. All member banks, regardless of location, are required to maintain deposits of 3 per cent against time deposits. Against all of these reserve deposits the Federal reserve banks are required to maintain a reserve in gold or lawful money equal to 35 per cent.

Discounts and advances are made by the reserve banks to the member banks to take care of essential requirements or such business expansion as may take place in their respective districts. These accommodations may be made in either one of two ways, first, by the rediscount of commercial, industrial, agricultural, or live-stock paper, or paper collateraled by Government bonds and certificates of indebtedness, and, second, by advances upon the note of the member bank, when secured by such eligible paper or Government obligations. In the case of discounts, the paper must not have a maturity of over 90 days at the time of discount, except in the case of agricultural or live-stock paper, when it may have a maturity at the time of discount of not more than six months, exclusive of days of grace. In the case of advances on the note of a member bank secured by eligible paper or Government obligations, the maturity of the note is limited to 15 days. It should not be supposed, however, that the amount borrowed by a member bank from the Federal reserve bank is itself the limit of the increased lending power of the member bank caused by that borrowing. What happens in such a case is best illustrated by an example:

If a customer desires to borrow $100,000 from a member bank, he gives his note for that amount and ordinarily receives not cash but a deposit credit for $100,000 on the books of the bank. Against this deposit liability of the bank a reserve of 7 per cent, 10 per cent, or 13 per cent (depending upon the location of the bank) must be maintained with the Federal reserve bank. In the event that the reserve deposits of this member bank with its reserve bank are not

Digitized by Google

sufficient to cover this $7,000 of additional reserve in the case of a country member bank, the bank borrows that amount, and not $100,000, from the Federal reserve bank in some one of the ways authorized by the Federal reserve act. It is apparent, therefore, that the loans made by the Federal reserve banks to their member banks do not represent the full amount of potential deposit credit expansion by the member banks to their customers. In fact, a loan by a Federal reserve bank to a country member bank in the form of a deposit credit forms the reserve basis for additional deposit loans by that member bank to its customers in amounts averaging about fourteen times the amount which it borrowed from the Federal reserve bank. Allowing for the fact, however, that about one-sixth of the customers' borrowing will ordinarily be required in notes, which the member bank will have to withdraw from the reserve bank, the expansive quality of a reserve deposit created by a loan or discount, in the case of a country member bank, would be about four and one-half, instead of about fourteen, times the amount of the reserve deposit. In estimating the extent of the assistance granted to member banks by the Federal reserve system, or in estimating the amount of expansion of business represented by the loans and discounts of the Federal reserve banks, this potential credit expansion by the member banks must be kept constantly in mind.

In order to satisfy the current demands of its depositors for cash, a member bank ordinarily finds it necessary to maintain in its vault a limited supply of cash or till money (in many instances in city banks estimated to be less than 1 per cent of its deposits) from which it may make its customary daily cash disbursements. This supply of cash or till money may be maintained from day to day by borrowings from the Federal reserve bank in the form of Federal reserve notes, which are issued in the manner explained later. This cash loaned by the Federal reserve bank to the member bank may be checked out by the bank's customer for the purpose of procuring funds for pay roll or other purposes. Ultimately it finds its way back into the bank in the form of new deposits. These funds are obtained in the first instance from the Federal reserve bank by the creation of a deposit credit with the reserve bank, which is checked against just as a customer of an ordinary commercial bank withdraws his deposits.

In addition to acting as a depository of the reserves of member banks, some of the Federal reserve banks also act as a clearing house for their members, so that at the end of the day's work deposit balances of the member banks are used as the basis against which checks drawn for or against individual member banks are debited or credited. In the event that a member has a net credit at the end of the day, its reserve account is increased by that amount. In the event that it has a net debit at the end of the day, its reserve account is decreased by that amount. If the decrease is so great as to bring its reserve balance below the minimum reserve requirement, it becomes necessary for the member bank to borrow in order to make good that reserve.

A member bank, therefore, may borrow from the Federal reserve bank for any one of three purposes—first, to make good its reserve against its own deposit liability; second, to obtain cash necessary to maintain its requisite vault cash; and, third, to make good its reserve against the net debit of clearing-house transactions.

Digitized by Google

FEDERAL RESERVE NOTES.

The Federal reserve note is an obligation of the United States Government issued by the Federal reserve bank. It is redeemable in gold on demand at the Treasury Department or in gold or lawful money at any Federal reserve bank, regardless of which bank issued it. It is a first and paramount lien on all of the assets of the issuing bank and, in addition, is secured by collateral security equal at least to 100 per cent of the amount of the note. That collateral may consist of (1) paper indorsed by member banks and issued directly for commercial, industrial, or agricultural purposes or for the purpose of carrying or trading in securities of the United States Government; that is, paper eligible for discount at a Federal reserve bank; (2) notes of a member bank secured by eligible paper or secured by obligations of the United States Government: (3) bills of exchange indorsed by a member bank and bankers' acceptances bought by a Federal reserve bank in the open market; and (4) gold or gold certificates. Each Federal reserve bank is also required to maintain a reserve in gold equal to not less than 40 per cent of the amount of its Federal reserve notes outstanding, except in certain cases hereinafter referred to. When gold is pledged as collateral for outstanding Federal reserve notes, it may be counted in making up the required 40 per cent reserve, as may also gold that is maintained in the redemption fund with the Treasury of the United States for the redemption of Federal reserve notes.

Federal reserve notes are originally issued by the Federal Reserve Board to the Federal reserve agent, who is the local representative of the Federal Reserve Board at the Federal reserve bank, and are issued through him to the Federal reserve bank upon its application accompanied by a deposit of the required collateral. Inasmuch as Federal reserve notes are issued against notes, drafts, bills of exchange and acceptances which are discounted by the member banks with the Federal reserve bank for the purpose of obtaining a loan, the Federal reserve notes bear a direct relation to and expand or contract in response to the expansion or contraction of business, agriculture, and industry, as indicated by the increase or decrease of loans and discounts of the member banks with the Federal reserve bank. When the requirements of business, agriculture, and industry permit, the Federal reserve notes are retired in the following manner: The loans and discounts of the member banks to their customers being decreased, and the deposits of the member banks, accordingly, being contracted, a member bank no longer needs to borrow from its Federal reserve bank to the same extent as when business demands are greater in order to maintain its reserve, and accordingly pays off its loans by a deposit with the Federal reserve bank of Federal reserve notes which are received by it from its own customers in the payment of their loans. In other words, when business permits of contraction of the loans and deposits of the customers of member banks, those member banks avail themselves of that opportunity to decrease their own borrowings from the Federal reserve bank, and, in doing so, decrease the total amount of Federal reserve notes outstanding. If the notes returned to the Federal reserve bank are those issued by it, they can not be paid out again except upon compliance with the conditions of an original issue. If, however, they are the notes of another Federal reserve bank,

Digitized by Google

they must be returned to the bank of issue for credit or redemption, and can not be issued again by that bank except in compliance with the conditions of an original issue.

The Federal reserve act provides that the Federal Reserve Board shall have power—

To suspend for a period not exceeding thirty days, and from time to time to renew such suspension for periods not exceeding fifteen days, any reserve requirement specified in this act: *Provided*, That it shall establish a graduated tax upon the amounts by which the reserve requirements of this act may be permitted to fall below the level hereinafter specified: *And provided further*, That when the gold reserve held against Federal reserve notes falls below 40 per centum, the Federal Reserve Board shall establish a graduated tax of not more than 1 per centum per annum upon such deficiency until the reserves fall to 32½ per centum, and when said reserve falls below 32½ per centum, a tax at the rate increasingly of not less than 1½ per centum per annum upon each 2½ per centum or fraction thereof that such reserve falls below 32½ per centum. The tax shall be paid by the reserve bank, but the reserve banks shall add an amount equal to said tax to the rates of interest and discount fixed by the Federal Reserve Board.

This section is evidently intended to provide for a case where the demands upon the lending power of the Federal reserve banks as a whole is such as to reduce the ratio of reserves to deposit and currency liabilities below the 35 and 40 per cent limits established by the act. The provision is obviously designed to cover an emergency and contains provisions which are intended to effect a reduction in loans and discounts which will bring the reserve ratio up to the reserve required by law. The section provides for the imposition of a tax upon the deficiency of the reserves which shall be reflected in the discount rates charged member banks, the purpose being to induce such pressure upon the loans and discounts of Federal reserve banks to member banks as to cause a reduction in these loans and discounts and consequently an increase in the reserve ratio to the point which the law fixes as the reserve required.

RESERVE RATIOS.

Under the Federal reserve act, each Federal reserve bank, and all the Federal reserve banks in the aggregate, are required to maintain reserves of 35 per cent in gold or lawful money against deposit liabilities, and a 40 per cent reserve in gold against currency (Federal reserve note) liabilities. The reserve required to be maintained by the Federal reserve bank, or by the system as a whole, will therefore be as follows, for example:

Deposits	$2,000,000,000	
Reserve against deposits 35 per cent		$700,000,000
Federal Reserve notes	3,000,000,000	
Reserve against notes 40 per cent		1,200,000,000
Making a net gold reserve requirement of		[1] 1,900,000,000

As all Federal reserve notes are redeemable in gold, theoretically at least, the gold reserve against note issues must be sufficient to insure the redemption of all such notes, or such portion of them as might conceivably be presented for redemption in gold at one time. If it be assumed, and the Federal reserve act does so assume, that a reserve of 40 per cent must be maintained against note issues to

[1] This is net gold reserve required except in so far as lawful money may form a part of the $700,000,000 reserve against deposits.

Digitized by Google

insure such redemption, it is then clear that if the reserve drops below 40 per cent the true or gold value of the note issue which it supports is reduced in the proportion that the deficiency of the reserve bears to the whole note issue. For example, if the note issue were $5,000,000,000, the gold reserve required would be $2,000,000,000. If the actual reserve were $1,500,000,000, the deficiency would be $500,000,000, or a theoretical depreciation of 10 per cent on the total currency issue.

The gold reserve may be reduced (1) by loans and discounts representing an increase or expansion of the deposit or currency liabilities in excess of the amount which the reserve will carry; (2) by the redemption of notes in gold; (3) by the withdrawal of gold in payment of adverse foreign balances of trade. If the reserve ratio, therefore, were reduced to the legal minimum for any reason, as, for example, by excessive loans to member banks, resulting in deposit and currency liabilities, any withdrawal in gold either for redemption of notes or to pay adverse balances of foreign trade would reduce the ratio below the legal minimum and depreciate the true or gold value of outstanding note issues.

For example, eliminating consideration of the fact that "lawful money" may form a part of reserve against deposits

Deposit liabilities	$2,000,000,000		
Note issue	3,000,000,000		
Legal reserve required		$1,900,000,000	
Notes redeemed in gold		500,000,000	
Remaining gold reserve			$1,400,000,000

This gold reserve would then be as follows:

Gold required as reserve against deposits	700,000,000		
Gold required as reserve against notes	1,000,000,000		
Total			1,700,000,000
Deficiency			300,000,000

The reserve ratio would, therefore, be reduced to 31⅓ per cent. If the gold were withdrawn in payment of foreign trade balances there might not be any reduction as a result in currency issue and the deficiency of the reserve, therefore, would be equal to the total amount withdrawn in payment of foreign trade balance and this reserve ratio accordingly further reduced.

It is evident from these examples that the protection of the integrity of the currency of the country requires that in normal times the ratio of the gold reserve to the deposit and currency liabilities shall be above the legal minimum in order that in abnormal times, or by reason of large credit demands on the part of members of the Federal reserve banks, heavy withdrawals of gold for redemption of notes or in payment of trade balances, the reserve will not fall below the legal minimum and the gold value of the note issue be thus unduly depreciated.

DISCOUNT RATES.

The discount rate is the rate at which a member bank may borrow from a Federal reserve bank and may differ with the classes or maturities of securities (commercial paper or Government bonds) redis-

Digitized by Google

counted with the Federal reserve bank or put up by the member bank as collateral for a loan from the Federal reserve bank. Theoretically, inasmuch as all loans made by the Federal reserve bank to member banks are presumably good, the discount rates on all loans should be the same regardless of the character of the paper discounted or collateral deposited. In practice, however, different discount rates have been charged, based both upon the character of the paper and upon the length of the maturity which it carries. As the characteristic primarily required in the investment is immediate availability, the shorter-time paper takes the lower rate. Until recently, a differential was generally made in favor of paper discounted or put up as collateral in the following order: (1) Government bonds or certificates of indebtedness; (2) bankers' acceptances; (3) commercial acceptances; (4) commercial paper.

The primary function of the Federal reserve bank is that of a bank of issue and its facilities are, therefore, not to be availed of for purposes of profit on the part of member banks, and in order that its loans and discounts and currency issues should be representative of the commercial, industrial, or agricultural expansion, the discount rate should be sufficiently above the commercial rate for money to make possible the creation of liabilities for loans and discounts and currency issues equivalent to the expansion of commerce, industry, or agriculture, without inviting borrowing for the purposes of profit on the part of the banks and speculation on the part of industry or business. Under such a policy the cycle of expansion and contraction of deposit and currency liabilities of the Federal reserve banks would be as follows:

Business expands, increasing demands for loans; market rate for money rises and banks borrow from the Federal reserve banks; deposits, circulation, and liabilities of Federal reserve banks increase; Federal reserve rates increase to keep pace with the market rates; profits from commercial loans being reduced, the member banks pay back loans to Federal reserve banks, causing a reduction in deposit and currency liabilities.

OPEN-MARKET TRANSACTIONS.

In addition to its functions as the depository of the reserve credit of the country and as a clearing house of the member banks, the Federal reserve bank exercises an additional function in the control and regulation of credit. This function is manifested in what is usually known as open-market transactions. That is, the direct purchase of bankers' or commercial acceptances from banks and bill brokers, and the sale of these acceptances to other banks or to other Federal reserve banks. These purchases operate to regulate the flow of credit and the interest rate in the following manner:

Whenever business in the centers of commerce, where large export and import transactions are financed, as well as large domestic transactions, is expanding, great quantities of bankers' and commercial acceptances are made. These acceptances are usually absorbed; that is, bought by banks, corporations and individual investors. If money is tight in these centers and interest rates consequently high, the reserve bank will purchase these acceptances from the banks or from bill brokers, or from the persons by whom they are

Digitized by Google

held, thus releasing the money paid for these acceptances in the hands of the banks, bill brokers, or persons holding the acceptances. This results in an increase of the funds of these banks available for other transactions, thus increasing the supply of credit in relation to the demand and effecting a reduction in the interest rate for commercial borrowings generally.

INTER-FEDERAL RESERVE BANK TRANSACTIONS.

One of the primary objects of a credit system is to mobilize reserves and make them available where needed and when needed. The creation of the 12 Federal reserve banks sets up a separate reserve in each of the 12 districts, but in order that excess reserves of each district may be available in any other district where there may be a deficiency of reserve, it is necessary that there should be some machinery by which the excess reserves of one bank may be transferred to another bank. This is accomplished in the Federal reserve system by means of inter-bank borrowings and by the settlements effected through a clearing fund known as the gold-settlement fund. This fund was originally established by each Federal reserve bank depositing in a fund at Washington a sum in gold of not less than $1,000,000, and in addition an amount equal to its indebtedness to all other Federal reserve banks. Each bank was required to maintain its balance in the gold settlement fund at not less than $1,000,000. In actual practice, however, the gold deposited by the Federal reserve banks is usually many times that sum. The amount on June 30, 1921 was $404,111,305. The net debit or credit of each bank each day is subtracted from or added to the proportion of the gold-settlement fund which the bank owns. The net proportion of the gold-settlement fund, therefore, owned by each bank will depend upon whether it is a debtor or a creditor of the other Reserve banks at the end of the day's settlement. The daily debit or credit of each bank as a result of inter-bank transactions is communicated by telegram to the Federal Reserve Board and the net debit or credit relation of each Federal reserve bank is settled by the Federal Reserve Board each day by the appropriate bookkeeping entry, so that the gold-settlement fund is in effect a security and convenience for the payment in gold at one place of the balances which may be due from one bank to another, and greatly increases the mobility of the exchanges between the reserve banks. Incidentally it might be mentioned that the Federal reserve agent at each Federal reserve bank, who holds the collateral against which Federal reserve notes are issued, also has a gold account with the Federal reserve board, deposited with the Treasury for his credit with the Federal Reserve Board in precisely the same manner as the Federal reserve banks make deposits to their credit in the gold-settlement fund. The amount standing to the credit of the Federal reserve agents on June 30, 1921, was $1,129,553,360, so that the total amount of gold deposited in the Treasury by the Federal reserve banks and the Federal reserve agents for their credit with the Federal Reserve Board was $1,533,664,665.

To illustrate the mobility of credit transfers between reserve banks an example is cited: If the gold-settlement fund is $24,000,000, representing an ownership in the fund of each bank of $2,000,000, and the bank of Kansas City owes the bank of New York City $500,000, the bank

Digitized by Google

of New York City, as shown by the books of the Federal Reserve Board on which the transaction is recorded, will own $2,500,000 of the gold-settlement fund and the bank of Kansas City will own $1,500,000. No gold whatever will have been taken out of the gold-settlement fund. The whole transaction representing a transfer of credit from Kansas City to New York will have been settled solely by book entries. This system avoids the great expense and loss of time and great inconvenience incident to the shipment of gold or currency to settle interbank indebtedness.

The net credit or debit in the gold-settlement fund as a result of interbank transactions may result from any one or more of the following transactions by the banks. (1) A net credit or debit as a result of check clearings and telegraphic transfers between member banks in one Federal reserve district and member banks in another Federal reserve district. (2) The rediscount by one reserve bank of paper discounted for member banks by another Federal reserve bank. (3) The sale of acceptances by one Federal reserve bank to another Federal reserve bank. (4) Transfers usually by telegraph order from one Federal reserve bank to another Federal reserve bank for account of the Treasurer of the United States, or for member banks.

The operations of the Federal reserve banks between themselves are very similar to the operation between the Federal reserve banks and member banks. If the reserve of a Federal reserve bank falls below the reserve required, it will replenish its reserve either by borrowing from another reserve bank which has an excess of reserve by rediscounting paper held by it with the other reserve bank, or by selling acceptances held by it to the other reserve bank. Either transaction in theory starts a flow of money in the direction of the bank which borrows, that is by rediscounting its paper or by selling its acceptances. In practice, however, as indicated above, the actual transfer of credit takes place by wired exchanges and is finally represented in a net increase or decrease of the bank's ownership in the gold-settlement fund.

BASIC LINE.

Inasmuch as all balances (whether created by borrowings or otherwise) of member banks left on deposit with the Federal reserve bank must have a reserve of 35 per cent in gold or lawful money, and inasmuch as all borrowings from the Federal reserve bank in the form of notes must have a reserve of 40 per cent in gold, it is apparent that the maximum lending power of the Federal reserve bank is limited, because of those reserve requirements, by the amount of capital and deposit contributions of all of its members in the form of gold and lawful money and by the amount of gold and lawful money acquired in other ways. If all member banks desired at the same time to borrow the maximum from their Federal reserve banks, it would theoretically be necessary for the reserve banks to pro rate those loans among the member banks in order to give each the amount of accommodation to which it is entitled without falling below the reserves required by the law. While it would be impossible to establish any absolute formula which will determine that maximum amount for each member bank, owing to the variable element of the fluctuation in the reserve banks' gold account through purchases, sales, transfers, etc., nevertheless, in order to fix a theoretical basic line which might

Digitized by Google

approximate a member bank's pro rata share of the Federal reserve bank's lending power, a formula was established which was somewhat uniform by each of the Federal reserve banks which is of theoretical value. That formula with certain exceptions was: The reserve deposit of the member bank with the Federal reserve bank less 35 per cent of that deposit (the amount of the reserve which the reserve bank is required to maintain against that deposit) plus the amount of capital contributed by the member bank, multiplied by two and one-half. Obviously, as all members do not borrow at the same time, and as they do not borrow the maximum amount they would be entitled to borrow if all banks were borrowing at once, some banks may and do borrow a larger sum than is represented by their basic line. The basic line, therefore, is merely a theoretical measure by which the borrowings of one bank may be measured against its borrowing capacity, or against the borrowings of other banks in relation to their borrowing capacity. During 1920 the basic line was given a practical significance, however, by the adoption of what is known as the progressive rate.

Illustration of application of basic line formula.

Capital and surplus		$50,000
3 per cent of capital and surplus		1,500
Demand deposits	$300,000	
Reserve against demand deposits, 7 per cent		21,000
Time deposits	$200,000	
Reserve against time deposits, 3 per cent		6,000
Total reserve		27,000
Less 35 per cent reserve required		9,450
Balance		17,550
Plus 3 per cent paid in to stock of Federal reserve bank		1,500
		19,050
Two and one-half times $19,050, basic line		47,625

PROGRESSIVE RATE.

The progressive rate was adopted by the Federal reserve banks of Kansas City on April 17, 1920, St. Louis on May 25, 1920, Dallas on May 11, 1920, and Atlanta on May 28, 1920. It consisted of the application of an additional or penalty rate of one-half of 1 per cent in addition to the regular discount rate for each amount of 25 per cent of borrowing on the part of a member bank in excess of its basic line, but there were certain exemptions from the operation of the progressive rate in the case of some of the banks, such as paper secured by Government obligations and limited amounts of agricultural or live-stock paper.

If the discount rate was 6 per cent and the member bank's basic line $100,000, the member bank would pay on the first $100,000, 6 per cent; on the next $25,000, 6½ per cent; on the next $25,000, 7 per cent; on the next $25,000, 7½ per cent; on the next $25,000, 8 per cent; and so on.

Obviously, if the bank's necessities were very great or if its reserves were impaired, thus reducing its basic line, the interest rate might

Digitized by Google

mount to a very high figure, and one instance has been called to the attention of the commission in which the maximum interest rate was as high as 87½ per cent. In this case, however, the average interest rate on the entire borrowings of the bank at that time was less than 9 per cent.

The progressive rate has been abolished in all of the four districts in which it once prevailed.

DISPOSITION OF EARNINGS OF FEDERAL RESERVE BANKS.

The Federal reserve act as amended provides for the payment of a 6 per cent annual dividend to the member banks on the stock held by them in the Federal reserve banks. This dividend is cumulative, and after it has been paid out of the earnings of the banks, the net earnings of the banks are paid to the United States as a franchise tax, except that the whole of such net earnings are paid into a surplus fund of each Federal reserve bank until the surplus amounts to 100 per cent of the subscribed capital stock. After this 100 per cent surplus is accumulated, 10 per cent of the net earnings in excess of the 6 per cent dividend is added annually to the surplus. The remainder above the charges for dividends and surplus is paid to the Government as a franchise tax. Upon the liquidation of a Federal reserve bank, the surplus in excess of the capital stock is paid to the United States Government.

The primary object of a Federal reserve bank is public service rather than profit, but profits have been realized during practically all of the period of the operation of the Federal reserve system. After the period of organization and during the periods when discount rates were high and the borrowings of member banks large, the earnings of Federal reserve banks have been very large.

Digitized by Google

CHAPTER II.

THE OPERATIONS OF THE FEDERAL RESERVE SYSTEM RELATED TO ECONOMIC PERIODS.

The Federal reserve act was approved December 23, 1913. The Federal reserve system began operations in November, 1914. At that time the European war was in progress. No one in this country had had experience in reserve banking, and the machinery had to be developed in accordance with the best current judgment and experience that could be obtained. The extent of the task involved in the development of the Federal reserve system is indicated by the following statement prepared by the statistical division of the Federal Reserve Board, at the request of the commission:

DEVELOPMENT OF THE FEDERAL RESERVE SYSTEM.

On December 23, 1913, the Federal reserve act was approved by the President, and on November 16, 1914, Federal reserve banks opened their doors for business. At the end of that year the number of banks belonging to the Federal reserve system was 7,582, of which 7,574 were national banks, while on August 15, 1921, the number was 9,791, of which 8,170 were national banks and 1,621 were State bank and trust company members. The Federal reserve system has thus grown not merely by the organization of new national banks but also through the accession of a considerable number of the larger State banks and trust companies. On November 27, 1914, the paid-in capital of the Federal reserve banks was $18,000,000, while on September 14, 1921, it had increased to $103,000,000, and in addition there was a surplus fund of $214,000,000. This large increase in capitalization was due to the gradual payment of subscriptions to the stock of the Federal reserve banks by member banks, to the addition of new member banks, and to the increase in capitalization of banks already in the system.

A table is here presented showing the principal items in the Federal reserve bank statement on the last statement day in November, 1914, when the banks began operation, on March 30, 1917, i. e., at the close of the month previous to the entry of the United States into the World War, on October 25, 1918, prior to the signing of the armistice on October 29, 1920, when the peak of postwar expansion was reached, and on September 14, 1921, the latest available date:

TABLE 1.—*Principal items showing development of Federal reserve system for selected dates from its organization to Sept. 14, 1921.*

[In thousands of dollars.]

	Nov. 27, 1914.	Mar. 30, 1917.	Oct. 25, 1918.	Oct. 29, 1920.	Sept. 14, 1921.
Paid-in capital of Federal reserve banks	18,050	56,075	79,190	97,753	102,982
Surplus of Federal reserve banks	.....	.....	1,134	164,745	213,824
Discounts secured by United States Government obligations	.....	.....	1,092,417	1,203,905	503,677
All other discounts	7,383	20,106	453,747	1,597,392	924,485
Total discounts held	7,383	20,106	1,546,164	2,801,297	1,428,162
Acceptances on hand	.....	84,473	398,623	298,375	40,712
Total earning assets	7,383	167,994	2,295,122	3,396,043	1,710,281
Members' reserve deposits	.....	720,411	1,683,499	1,805,661	1,631,038
Federal reserve notes in circulation	2,700	357,610	2,507,912	3,351,303	2,491,651
Federal reserve bank notes in circulation	.....	.....	58,859	214,961	103,078
Reserves:					
Gold	227,840	938,046	2,045,132	2,003,320	2,684,501
Total	262,470	947,328	2,098,169	2,168,038	2,834,502
Reserve ratio	[1] 104.2	[1] 89.0	[1] 49.6	[1] 43.1	[2] 67.5

[1] Ratio of total reserves to net deposits and Federal reserve notes combined.
[2] Ratio of total reserves to total deposits and Federal reserve notes combined.

Digitized by Google

The dates in the table divide the history of the system into four well-defined periods: 1. The prewar or organization period. 2. The period of war finance. 3. The postwar period of expansion. 4. The most recent period characterized chiefly by a reduction in earning assets of the Federal reserve banks and in Federal reserve note circulation.

1. The prewar period in the history of the Federal reserve system was largely a period of organization, during which the banks were establishing themselves as an integral part of the financial machinery of the country. On March 30, 1917, the total amount of discounted paper held by the reserve banks was only slightly in excess of $20,000,000, and the total amount of acceptances on hand was $84,500,000. It will be seen that the member banks were availing themselves only to a moderate extent of the rediscounting facilities offered by the Federal reserve system, and that the operations of the reserve banks in purchasing acceptances in the open market were of considerably greater importance. One of the purposes of the Federal reserve system was to create an acceptance market in the United States, and the fact that the system was making considerable headway in this field from the beginning is indicated by the figure just mentioned. The other cardinal function of the Federal reserve banks, namely, that of banks of issue, was developing comparatively slowly, and just before the entry of the United States into the World War the total Federal reserve note circulation was only $357,600,000, issued largely in exchange for gold and gold certificates. The increase in the gold reserves of the banks between the end of November, 1914, and the end of March, 1917, when the amount was in excess of $938,000,000, was due to the general growth of the system and to the continuous importation of gold into the United States in payiment for war supplies by the allied belligerents. On the eve of America's entry into the war the reserve ratio of the 12 Federal reserve banks combined, i. e., the ratio of total reserves to Federal reserve note and net deposit liabilities combined, was 89 per cent.

2. With the entry of the United States into the war the expansion of the Federal reserve system became much more rapid and the character of its growth was influenced by the war needs of the Nation. The flotation of the successive Liberty loans was facilitated by the existence of the Federal reserve system, as the Federal reserve banks offered preferential rates for paper secured by Government obligations. On the last report day in October, 1918, the total holdings of discounted paper amounted to $1,546,000,000, of which more than two-thirds was paper secured by Government war obligations. At the same time, the acceptance holdings of the Federal reserve banks had increased to $399,000,000, while the total earning assets of the Federal reserve banks just before the armistice were nearly $2,300,000,000. To this increase in earning assets corresponded an equivalent increase in Federal reserve note circulation, which on October 25, 1918, amounted to $2,508,000,000. As the result of the general growth of the system and of the amendments to the Federal reserve act adopted in June, 1917, by which all lawful reserves of member banks had to be held with the Federal reserve banks, the gold and total reserves of the banks show a large increase during the war period, and just before the cessation of hostilities gold reserves were $2,045,000,000 and total reserves $2,098,000,000. In spite of this large increase in reserves, the growth of deposit and note liabilities resulted in a reduction of the reserve ratio to 49.6 per cent.

3. Although actual hostilities ceased on November 11, 1918, the war was not over from the point of view of finance and banking. The Victory loan was not floated until the spring of 1919 and the Treasury was still under the necessity of expending large amounts of money for war purposes. During the latter part of 1919 occurred a rapid growth of bank credit due to the necessity of financing our exports and to postwar expansion and speculation. During the two years, October 25, 1918, to October 29, 1920, the total discounts of the Federal reserve banks increased from $1,546,000,000 to $2,801,000,000, the larger part of the increase being in paper not secured by Government obligations. Acceptance holdings declined by about $100,000,000 during that period, and the increase in total earning assets was from $2,295,000,000 to $3,396,000,000. Federal reserve note circulation increased rapidly and at the end of October, 1920, stood at $3,351,000,000, and in addition there were about $215,000,000 of Federal reserve bank notes in circulation. While the liabilities of the banks were thus greatly increased, their gold reserves showed a decline as a consequence of the outward flow of gold in settlement of obligations with oriental and South American countries accumulated during the war, and their total reserves showed a comparatively small increase. As a consequence, the reserve ratio of the Federal reserve banks stood at the end of October, 1920, at 43.1 per cent.

4. Since that time there has been practically a continuous reduction in the volume of discounts of the Federal reserve banks. The rapid decline in the price level, together with a general readjustment of business activity following the postwar

Digitized by Google

expansion, resulted in a reduction of the discounts held by the Federal reserve banks between October 29, 1920, and September 14, 1921, from $2,801,000,000 to $1,428,000,000, the reduction in paper secured by Government obligations being relatively larger than the reduction in other discounts. At the same time acceptances on hand declined from $298,000,000 to $41,000,000, partly as the result of the falling off in foreign trade but also as a consequence of the easing of money rates, which made acceptances a more attractive investment for the public. Federal reserve note circulation declined during the period from $3,351,000,000 to $2,492,000,000 and Federal reserve bank note circulation was reduced to less than one-half of its former figure, this latter reduction being due mainly to the purchases of silver by the Treasury in accordance with the Pittman Act and the substitution of silver coin and silver certificates for Federal reserve bank notes. While the last year thus saw a large reduction in the liabilities of the Federal reserve banks, it also witnessed a very heavy increase in the reserves. On September 14, 1921, gold reserves stood at $2,685,000,000 and total reserves at $2,835,000,000, the reserve ratio being 67.5 per cent.

This large increase in reserves was due entirely to the imports of gold during the period, caused in the main by the fact that the American dollar was the only currency in the world that maintained its parity with gold and that all the world was heavily indebted to the United States and was making payments in cash, in so far as it was not able to pay in goods, or to secure further credit.

While the above sketch presents in general terms the development of the credit operations of the Federal reserve banks, a history of the system's growth requires mention of the increase in the number of important functions which it performs. The Federal reserve banks are not merely a rediscounting and note issuing machine. One of the very important services rendered by the system to the business community is its clearing operations. As a consequence of the work of the Federal reserve banks in clearing checks, it had been estimated that the average time required for the collection of out-of-town checks in the United States has been practically cut in two and the business community benefits by the reduction in cost. The Federal reserve banks clear checks not only when drawn on member banks but on all the banks on the so-called "par list," i. e., on banks which agree to remit checks at par. The number of banks on the par list at the present time is 28,342, all the banks in a great majority of the States being included in the list. The total volume of clearings by the Federal reserve banks during the month ending August 15 of this year amounted to $9,188,970,000. The work of clearing checks, which is performed in the transit departments of the Federal reserve banks, requires the assistance of more employees than any other function of the banks. The total number of employees of the Federal reserve banks on different dates was as follows:

December 31—		December 31—	
1915	442	1918	7,706
1916	920	1919	9,459
1917	2,985	1920	12,284

Closely associated with clearings is the operation of the gold settlement fund. This fund, consisting of gold contributed by the different reserve banks, is held in custody, by the Treasurer of the United States and is counted as part of the gold reserves of the Federal reserve banks. A daily settlement of the debits and credits between reserve banks is effected by wire and large transfers of funds from one section of the country to the other are thus accomplished without the shipment of actual cash. The aggregate volume of inter-Federal reserve bank clearings and transfers through the gold settlement fund during August, 1921, was $5,530,959,000.

A further function of the Federal reserve banks has been the supplying of cash to member and nonmember banks for till money and for the requirements of their customers. This function of the reserve banks has made it possible for the banks of the country to obtain cash more promptly and to have the assurance that it is available at all times. The total amount of currency received from member and nonmember banks during the year 1920, was $6,816,449,000, and the total amount shipped to them was $6,894,405,000.

The Federal reserve banks also act as fiscal agents of the Government. It is through them that the Government securities are floated, and the Government discharges its obligations by checks payable at the Federal reserve banks. At present there are no longer United States subtreasuries, and all the work previously accomplished by these institutions has been transferred to the Federal reserve banks.

To appreciate the part played by the Federal reserve system in the recent crisis, it is necessary to understand something of the characteristics of the economic periods, which in part determined

Digitized by Google

the policy adopted by the Federal Reserve Board and the Federal reserve banks, and were in part effected by that policy.

For the purposes of this consideration the period of the operation of the Federal reserve banks has been divided into five economic divisions, each of which had its distinct and characteristic economic phenomena, and all of which were disturbed by the unexampled upheaval brought about by a war which involved the whole world.

FIRST ECONOMIC PERIOD—NOVEMBER, 1914, TO APRIL, 1917.

The first of these divisions is the period beginning with the organization of the Federal reserve system and ending with our entrance into the World War. The insistent demands of the Allies for food, clothing, and, more particularly, for war material, resulted in great expansion of business activity in the United States and an enormous inflow of gold, with a constant rise of prices.

This rise of prices was accelerated by the great necessities of the warring countries, and neutrals as well, for certain supplies, which resulted in the making of forward contracts in which price was a secondary consideration. Under the impulse of this demand the price indices of commodities rose from November, 1914, to April, 1917, as shown in Table 2.

TABLE 2.—*Price Indices of commodities from November, 1914, to April, 1917.*

	November, 1914.[1]	April, 1917.[1]		November, 1914.[1]	April, 1917.[1]
Farm products	101	181	Lumber and building materials	98	114
Food, etc	105	182	Chemicals and drugs	100	170
Cloths and clothing	100	169	House-furnishing goods	100	139
Fuel and lighting	99	184	Miscellaneous	100	140
Metals and metal products	96	206	All commodities	101	172

[1] Source: Bureau of Labor Statistics.

The price of wheat at Chicago rose from an average of 91 cents in 1913 to $2.31 in April, 1917, and $2.95 in May, 1917. Exports of merchandise rose in value from $2,465,884,000 for the fiscal year ending June 30, 1913, to $6,227,104,000 for the fiscal year ending June 30, 1917. A large part of this increase was in those articles of export which have direct relation to the prosecution of war. As compared with 1913, the exports of such material in the fiscal year ending June 30, 1916, increased in value from $422,294,000 to $1,910,238,000, an increase of 352 per cent.

Banking statistics completely coincident with this period can not be obtained, but it is possible to get statistics sufficiently coincident with the period to make possible a fair judgment as to the relation of the increase in prices to economic forces.[1]

From June, 1914, to June, 1917, the loans and discounts of all banks, State and National, excluding savings banks, increased from $12,243,359,000 to $17,380,924,000, an increase of $5,137,565,000, or 41 per cent. In the same period loans and discounts of national

[1] Statistics of expansion and contraction of loans and deposits of banks (Federal reserve and all others), currency issues, circulation, etc., are taken from Table 47 on page 154, compiled by the commission from data furnished by the Federal Reserve Bank of New York and the Comptroller of the Currency and other sources.

Digitized by Google

banks increased from $6,430,069,000 to $8,957,678,000, an increase of $2,527,609,000, or 39 per cent.

From October, 1914, to March, 1917, the loans and discounts of National banks increased from $6,316,478,000 to $8,761,930,000, an increase of $2,445,452,000, or 38 per cent.

It is fair to say, therefore, that the increase in deposit currency during this period was approximately 40 per cent.

Loans and discounts of banks, State and National, excluding savings banks, prior to this period had averaged an increase of about 6 per cent. It is, therefore, apparent that the rate of increase during the period under discussion here was somewhat more than double the normal increase.

From October, 1914, to March, 1917, the general stock of money in the United States increased from $4,037,736,000 to $5,146,178,000, an increase of $1,108,442,000, or 27.4 per cent.

During this period prices of all commodities increased 75 per cent, and farm products 79 per cent, according to the indices of the Bureau of Labor Statistics. Quantity production during the period 1914 to 1917 increased 25.5 per cent, according to the tables of Dr. Edmund E. Day.

Loans and discounts of Federal reserve banks for March, 1917, had reached $104,579,000 and Federal reserve notes the sum of $357,610,000.

The major portion of the increases in both loans and discounts during this period occurred in 1916 and the early part of 1917 and were fairly coincident with the great influx of gold, which began early in 1916. Net imports of gold in 1916 were $403,759,753 and in 1917 were $685,254,801.

It is altogether probable, if not entirely conclusive, that the increases in prices which took place during the period referred to were due to the combined factors of great war demands and very large imports of gold which made possible an increase in Federal reserve note issues and general stock of money in circulation. During this period the discount rate effective at the Federal reserve banks ranged from 3 per cent to 5½ per cent and were constantly above the current rates for commercial loans by member banks, at least in the East and in the money centers of the country.

As stated in Chapter I, the policy of the Federal reserve banks in establishing discount rates above the going commercial rates applicable to the various classes of commercial paper was in accordance with the policy and practice of the banks of issue in the principal countries of the world having central banking systems. Table 3 on page 32 exhibits the discount rates effective at the banks of issue in England, France, Germany, Italy, Switzerland, Holland, Belgium, Austria, and Japan compared with the open market rates during the war period so far as the commission has been able to obtain the data.

Digitized by Google

TABLE 3.—*Open-market and official bank discount rates.*

a. ENGLAND.[1]

End of month.	Official bank rate.	Open-market rate.	End of month.	Official bank rate.	Open-market rate.
1914.	*Per cent.*	*Per cent.*	1916.	*Per cent.*	*Per cent.*
January	3	2 1/16	January	5	5 1/2
February	3	2 1/2	February	5	5 1/16
March	3	1 1/2	March	5	4 15/16
April	3	2 1/16	April	5	4 15/16
May	3	2 1/2	May	5	4 15/16
June	3	2 1/2	June	5	5 1/2
July	8	[2] 2 3/16	July	6	5 1/2
August	5	4 1/2	August	6	5 1/2
September	5	3 1/2	September	6	5
October	5	3	October	6	5 1/2
November	5	2 1/2	November	6	5 15/16
December	5	2 1/2	December	6	5 1/2
1915.			1917.		
January	5	1 7/16	January	5 1/2	5
February	5	1 1/2	February	5 1/2	5 1/16
March	5	2 1/2	March	5 1/2	4 15/16
April	5	2 1/2	April	5	4 1/2
May	5	2 1/2	May	5	4 1/2
June	5	4 1/2	June	5	4 15/16
July	5	5	July	5	4 1/2
August	5	4 1/2	August	5	4 1/2
September	5	4 1/16	September	5	4 1/2
October	5	4 1/2	October	5	4 1/2
November	5	5 1/2	November	5	4 1/2
December	5	5 1/2	December	5	4

b. FRANCE.[3]

1914.			1916.		
January	3 1/2	3 1/2	January	5	5
February	3 1/2	2 1/2	February	5	5
March	3 1/2	2 1/2	March	5	5
April	3 1/2	2 1/2	April	5	5
May	3 1/2	2 1/2	May	5	5
June	3 1/2	2 1/2	June	5	5
July	4 1/2	2 1/2	July	5	5
August	5	2 1/2	August	5	5
September	5	5	September	5	5
October	5	.....	October	5	5
November	5	.....	November	5	5
December	5	.....	December	5	5
1915.			1917.		
January	5	5	January	5	5
February	5	5	February	5	5
March	5	5	March	5	5
April	5	3 1/2	April	5	5
May	5	3 1/2	May	5	5
June	5	3 1/2	June	5	5
July	5	5	July	5	5
August	5	5	August	5	5
September	5	5	September	5	5
October	5	5	October	5	5
November	5	5	November	5	5
December	5	5	December	5	5

c. GERMANY.[3]

1914.			1914.		
January	5	3	July	4	2 1/2
February	4	3 1/2	August	4	.....
March	4	3 1/2	September	4	.....
April	4	2 1/2	October	4	.....
May	4	2 1/2	November	4	.....
June	4	2 1/2	December	5	.....

[1] Source—Economist, London.
[2] July 24 figure; rate for July 31 not published.
[3] Sources—Official rates: Economist (London). Open-market rates: 1914, Economist (London); 1915-1917, Banca Commerciale Italiana; 1916-1918, Cenni Statistici.

Digitized by Google

TABLE 3.—*Open-market and official bank discount rates*—Continued.

c. GERMANY—Continued.

End of month.	Official bank rate.	Open-market rate.	End of month.	Official bank rate.	Open-market rate.
1915.	*Per cent.*	*Per cent.*	1916.	*Per cent.*	*Per cent.*
January	5	4	July	5	4½
February	5	4	August	5	4½
March	5	4⅛	September	5	4½
April	5	4¼	October	5	4½
May	5	3⅞	November	5	4½
June	5	3¼	December	5	4½
July	5	3⅜	1917.		
August	5	3⅜	January	5	4½
September	5	4	February	5	4½
October	5	4⅛	March	5	4½
November	5	4⅛	April	5	4½
December	5	4⅛	May	5	4½
1916			June	5	4½
January	5	5⅛	July	5	4½
February	5	4⅞	August	5	4½
March	5	4⅞	September	5	4½
April	5	4⅞	October	5	4½
May	5	4⅞	November	5	4½
June	5	4⅞	December	5	4½

d. ITALY.[1]

1914.			1916.		
January	5½	5	January	5½	3½
February	5½	4½	February	5½	4½
March	5½	4½	March	5½	4½
April	5½	4½	April	5½	3½
May	5	4½	May	5½	3½
June	5	4½	June	5½	3½
July	5	4½	July	5	4
August	6	.....	August	5	3½
September	6	.....	September	5	3½
October	6	.....	October	5	3½
November	5½	.....	November	5	3½
December	5½	.....	December	5	4
1915.			1917.		
January	5½	5½	January	5	4
February	5½	5½	February	5	4
March	5½	5	March	5	4
April	5½	5	April	5	4
May	5½	6	May	5	4
June	5½	6	June	5	4
July	5½	5½	July	5	4
August	5½	5½	August	5	4
September	5½	4½	September	5	4
October	5½	4½	October	5	4
November	5½	4½	November	5½	4
December	5½	4	December	5½	5½

e. SWITZERLAND.[1]

1914.			1915.		
January	4½	3½	April	4½	3⅜
February	3½	3 7/16	May	4½	3⅜
March	3½	3⅜	June	4½	3⅜
April	3½	3	July	4½	3⅜
May	3½	2⅞	August	4½	3⅜
June	3½	2⅞	September	4½	3⅜
July	5½	2⅞	October	4½	3⅜
August	6	.....	November	4½	3⅜
September	5	.....	December	4½	3
October	5	.....	1916.		
November	5	.....	January	4½	2⅜
December	5	.....	February	4½	2⅜
1915.			March	4½	2 7/16
January	4½	3⅞	April	4½	2½
February	4½	3⅜	May	4½	2
March	4½	3⅜	June	4½	1¾

[1] Sources—Official rates: Economist (London). Open-market rates: 1914, Economist (London); 1915–1917, Banca Commerciale Italiana; 1916–1918, Cenni Statistici.

Digitized by Google

TABLE 3.—*Open-market and official bank discount rates*—Continued.

e. SWITZERLAND—Continued.

End of month.	Official bank rate.	Open-market rate.	End of month.	Official bank rate.	Open-market rate.
1916.	*Per cent.*	*Per cent.*	1917.	*Per cent.*	*Per cent.*
July	4½	1¼	March	4½	2½
August	4½	2	April	4½	1⅝
September	4½	2¼	May	4½	1⅝
October	4½	2⅜	June	4½	1⅝
November	4½	3⅜	July	4½	1⅝
December	4½	4¼	August	4½	1⅝
1917.			September	4½	2⅜
January	4½	3½	October	4½	4½
February	4½	2¾	November	4½	4⅝
			December	4½	4⅝

f. HOLLAND.[3]

1914.			1916.		
January	5	4½	January	4½	2
February	4	4	February	4½	1½
March	3½	3	March	4½	1⅝
April	3½	3½	April	4½	1⅝
May	3½	3	May	4½	1⅞
June	3½	3½	June	4½	2⅛
July	4½	3½	July	4½	1½
August	5	.....	August	4½	1¼
September	5	.....	September	4½	1
October	5	.....	October	4½	1½
November	5	.....	November	4½	3½
December	5	.....	December	4½	4½
1915.			1917.		
January	5	4½	January	4½	1½
February	5	4½	February	4½	2½
March	5	4½	March	4½	1½
April	5	4	April	4½	2
May	5	4	May	4½	2
June	5	4	June	4½	1½
July	4½	2½	July	4½	2
August	4½	2½	August	4½	2
September	4½	2½	September	4½	1½
October	4½	3	October	4½	2½
November	4½	3½	November	4½	3½
December	4½	3½	December	4½	4

g. BELGIUM.[4]

1914.			1916.		
January	4	3½	January	5	.....
February	4	3½	February	5	.....
March	4	3½	March	5	.....
April	4	3½	April	5	.....
May	4	2½	May	5	.....
June	4	2½	June	5	.....
July	5	3½	July	5	.....
August	[5] 5	.....	August	5	.....
September	5	.....	September	5	.....
October	5	.....	October	5	.....
November	5	.....	November	5	.....
December	5	.....	December	5	.....
1915.			1917.		
January	5	4	January	5	.....
February	5	4	February	5	.....
March	5	4	March	5	.....
April	5	4	April	5	.....
May	5	4	May	5	.....
June	5	4	June	5	.....
July	5	4	July	5	.....
August	5	4	August	5	.....
September	5	4	September	5	.....
October	5	4	October	5	.....
November	5	[6]	November	5	.....
December	5	[6]	December	5	.....

[3] Sources—Official rates: Economist (London). Open-market rates: 1914, Economist (London); 1915-1917, Banca Commerciale Italiana; 1916-1918, Cenni Statistici.

[4] Sources—Official rates: Economist (London). Open-market rate: 1916, 1917, Banca Commerciale Italiana, Cenni Statistici.

[5] August 3-27, 7 per cent.

[6] No figures published from this date.

Digitized by Google

TABLE 3.—*Open-market and official bank discount rates*—Continued.

h. AUSTRIA.[8]

End of month.	Official bank rate.	Open-market rate.	End of month.	Official bank rate.	Open-market rate.
1914.	*Per cent.*	*Per cent.*	1916.	*Per cent.*	*Per cent.*
January	5½	4½	January	5	2½
February	4½	3 7/8	February	5	3
March	4	3¼	March	5	2¾
April	4	3¼	April	5	2
May	4	3¼	May	5	1½
June	4	3½	June	5	1½
July	6	3¾	July	5	1½
August	8	.....	August	5	1½
September	8	.....	September	5	1½
October	5½	.....	October	5	1½
November	5½	.....	November	5	1½
December	5½	.....	December	5	1½
1915.			1917.		
January	5½	2½	January	5	1½
February	5½	2½	February	5	1½
March	5½	2½	March	5	1½
April	5	2½	April	5	1½
May	5	2½	May	5	1½
June	5	2½	June	5	1½
July	5	3	July	5	1½
August	5	2½	August	5	1½
September	5	3½	September	5	1½
October	5	2½	October	5	1½
November	5	2½	November	5	1½
December	5	3	December	5	1½

i. JAPAN.[7 9]

1914.			1916.		
January	6.57	(9)	July	5.84	(10)
February	6.57	(9)	August	5.84	(10)
March	6.57	(9)	September	5.84	(10)
April	6.57	(9)	October	5.84	(10)
May	6.57	(9)	November	5.84	(10)
June	6.57	(9)	December	5.84	(10)
July	7.30	(9)			
August	7.30	(9)	1917.		
September	7.30	(9)	January	5.84	(10)
October	7.30	(9)	February	5.84	(10)
November	7.30	(9)	March	5.11	(11)
December	7.30	(9)	April	5.11	(11)
1915.			May	5.11	(11)
January	7.30	(11)	June	5.11	(11)
February	7.30	(11)	July	5.11	(11)
March	7.30	(11)	August	5.11	(11)
April	7.30	(11)	September	5.11	(11)
May	7.30	(11)	October	5.11	(11)
June	7.30	(11)	November	5.11	(11)
July	7.30	(11)	December	5.11	(11)
August	7.30	(11)	1918.		
September	7.30	(11)	January	5.11	(11)
October	7.30	(11)	February	5.11	(11)
November	7.30	(11)	March	5.11	(11)
December	7.30	(11)	April	5.11	(11)
1916.			May	5.11	(11)
January	7.30	(10)	June	5.11	(11)
February	7.30	(10)	July	5.11	(11)
March	7.30	(10)	August	5.11	(11)
April	6.57	(10)	September	5.84	(12)
May	6.57	(10)	October	5.84	(12)
June	6.57	(10)	November	6.57	(12)
			December	6.57	(12)

[7] Sources—Official rate: Bank of Japan, Annual Report. Market rate: 1914–1917, Japan, department of finance, Financial and Economic Annual of Japan.

[8] Sources—Official rate: 1918, Bank of Japan, Annual Report; 1919–1921, Economist (London). Market rate: 1918–19, Japan, department of finance, Financial and Economic Annual of Japan, 1920; 1920–21, Federal Reserve Bulletin, May and September, 1921.

[9] Average for year, 9.9 per cent.

[10] Average for year, 8.4 per cent.

[11] Average for year, 9.5 per cent.

[12] Average for year, 7.9 per cent.

[13] Average for year, 7.8 per cent.

Digitized by Google

TABLE 3.—*Open-market and official bank discount rates*—Continued.

JAPAN—Continued.

End of month.	Official bank rate.	Open-market rate.	End of month.	Official bank rate.	Open-market rate.
1919.	*Per cent.*	*Per cent.*	1920.	*Per cent.*	*Per cent.*
January	6.57	[10]	July	8.03	10.95
February	6.57	[10]	August	8.03	10.80
March	6.57	[10]	September	8.03	10.59
April	6.57	[10]	October	8.03	10.48
May	6.57	[10]	November	8.03	10.44
June	6.57	[10]	December	8.03	10.26
July	6.57	[10]			
August	6.57	[10]	1921.		
September	6.57	[10]	January	8.03	10.33
October	7.30	[10]	February	8.03	9.71
November	8.03	[10]	March	8.03	9.23
December	8.03	[10]	April	8.03	9.16
			May	8.03	9.05
1920.			June	8.03	8.91
January	8.03	9.38	July	8.03	8.36
February	8.03	9.67	August	8.03	.....
March	8.03	10.15	September	.....	.....
April	8.03	10.62	October	.....	.....
May	8.03	10.95	November	.....	.....
June	8.03	10.99	December	.....	.....

[10] Average for year, 8.4 per cent.

SECOND ECONOMIC PERIOD—APRIL, 1917, TO AUGUST, 1918.

The second period covers the time from our entrance into the war in April, 1917, to August, 1918, when the hope of an allied victory became convincing, and we began to look forward to the readjustments which we realized peace would again make necessary. With our entrance into the war came the necessity of changing many manufacturing plants from production of articles necessary in peace to the production of articles necessary in war. Increases of production in all "essential" commodities were necessitated. The Government encouraged such increased production in every possible way, both on the farms and in the factories of the Nation, and this encouragement met with unqualified response from every such industry. Increased production of "essentials," however, was very largely met by the increased demand abroad for such goods, and prices continued to rise until in August, 1918, when the price indices were as shown in Table 4, as compared with April, 1917.

TABLE 4.—*Price indices of commodities of August, 1918, as compared with April, 1917.*

	April, 1917.[1]	August, 1918.[1]		April, 1917.[1]	August, 1918.[1]
Farm products	181	230	Lumber and building materials	114	157
Food, etc	182	191	Chemicals and drugs	170	222
Cloths and clothing	169	252	House-furnishing goods	139	221
Fuel and lighting	184	166	Miscellaneous	149	191
Metals and metal products	208	185	All commodities	172	202

[1] Source: Bureau of Labor Statistics.

The Government competed with foreign buyers and with the general public for labor and supplies, and the departments of the Government competed with each other. Efforts were made to bring the pur-

Digitized by Google

chase of food supplies by the allied Governments and by our own Government for the use of the armies, and for the people, under a single hand, and while these efforts were in a measure successful, they served only to retard and not wholly to stop increasing prices. Various devices were adopted by the Government to reduce consumption of essential articles and to control both production and consumption of nonessentials. The Food Administration was set up for the purpose of controlling the distribution, consumption, and price of food. The control of fuel was placed in the hands of a Fuel Administrator and Congress passed an act guaranteeing the price of wheat to the farmers. The Railroad Administration took over the control of transportation with a view of controlling transportation in the interest of essential requirements. Exports were limited and controlled. Credit was provided for essential expansion of war industries if needed, through the War Finance Corporation, and the unnecessary use of credit for nonessential purposes was prevented through the operation of the Capital Issues Committee.

From June 30, 1917, to June 30, 1918, loans and discounts of all banks, state and national, exclusive of savings banks, increased from $17,380,924,000 to $19,432,863,000, an increase of $2,051,939,000, or 11.9 per cent. Loans and discounts of national banks during the same period increased from $8,957,678,000 to $10,135,842,000, an increase of $1,178,164,000, or 13.1 per cent.

During the same period loans and discounts and bills bought by Federal reserve banks increased from $399,512,000 to $1,086,023,000, an increase of $686,511,000, or 171 per cent; while Federal reserve notes increased from $508,753,000 to $1,722,216,000, an increase of $1,213,463,000, or 238 per cent.

From March, 1917, to August, 1918, loans and discounts and bills bought by Federal reserve banks increased from $104,579,000 to $1,660,798,000, an increase of $1,556,219,000, or 1,487 per cent. In the same period Federal reserve notes increased from $357,610,000 to $2,092,708,000, an increase of $1,635,098,000, or 483 per cent.

It should be remembered that the increases shown in the items of the Federal reserve system include the normal expansion of the system, as it was being put in operation, and are, therefore, not an accurate guide of the expansion of the Federal reserve system which properly belongs to the period, and are not wholly comparable with the figures showing expansion of loans and discounts in state and national banks.

The general stock of money in the United States increased during the period from March, 1917, to August, 1918, from $5,146,178,000 to $6,895,090,000, an increase of $1,748,912,000, or 33.9 per cent.

Prices during the period from March, 1917, to August, 1918, increased, as shown by the indices of the Bureau of Labor Statistics, 17.4 per cent, and farm products increased 27 per cent, as compared with an increase in loans and discounts of banks of approximately 14 per cent, and an increase in the general stock of money in the country of 33.9 per cent. Gold exports during 1918 exceeded gold imports by $66,438,741.

The physical volume of goods produced during 1918 decreased slightly as compared with 1919, as shown by the Day table. The Government's credit requirements during this period were very great. The excess of disbursements from April 6, 1917, to August 21, 1918,

Digitized by Google

amounted to $12,300,000,000, which excess was financed entirely by the Treasury through the Federal reserve banks and their auxiliary organizations.

The tremendous proportions of the sums which had largely to be raised by expansion of bank credit is indicated by Table 5 below, showing receipts and disbursements of the United States Government for the period April 6, 1917, to June 30, 1921, which shows in addition to receipts and disbursements during this period, the net deficit of revenues, which had to be met by loans. The Federal reserve banks were called upon to expand their loans so as to provide the reserves needed by the member banks to support their enlarged deposit liabilities.

TABLE 5.—*Preliminary financial statement of the United States Government for the period from Apr. 6, 1917, to June 30, 1921.*

[On the basis of daily Treasury statements.]

RECEIPTS AND DISBURSEMENTS.

Net balance in the general fund Apr. 5, 1917	$92, 317, 710.27
Receipts, exclusive of principal of public debt, Apr. 6, 1917, to June 30, 1921	21, 703, 777, 058.01
Public debt receipts Apr. 6, 1917, to June 30, 1921	73, 103, 425, 416.72
Total	94, 899, 520, 185.00
Disbursements, exclusive of principal of public debt, Apr. 6, 1917, to June 30, 1921	43, 946, 740, 585.23
Public debt disbursements Apr. 6, 1917, to June 30, 1921	50, 403, 101, 494.01
Net balance in the general fund June 30, 1921	549, 678, 105.76
Total	94, 899, 520, 185.00

PUBLIC DEBT AND EXPENDITURES.

Total disbursements for war period, exclusive of principal of public debt	43, 946, 740, 585.23
Total receipts for war period, exclusive of principal of public debt	21, 703, 777, 058.01
Excess of disbursements over receipts, for war period	22, 242, 963, 527.22
Debt decrease Dec. 31, 1920, on account of fractional currency lost and destroyed	4, 842, 066.45
Total	22, 238, 121, 460.77
Total gross debt June 30, 1921	23, 977, 450, 552.54
Total gross debt Apr. 5, 1917	1, 281, 968, 696.28
Gross debt increase for war period	22, 695, 481, 856.26
Net balance in the general fund June 30, 1921.. $549, 678, 105.76	
Net balance in the general fund Apr. 5, 1917... 92, 317, 710.27	
Net increase in balance in general fund	457, 360, 395.49
Net debt increase for war period	22, 238, 121, 460.77

Digitized by Google

TABLE 5a.—*Statement showing classified receipts of the United States Government, exclusive of the principal of the public debt, by months, from Apr. 6, 1917, to June 30, 1921, as published in daily Treasury statements.*

	Customs.	Income and profits tax.	Miscellaneous internal revenue.	Miscellaneous revenue, including Panama Canal.	Total.
Apr. 6 to 30, 1917	$17, 863, 547. 22	$24, 075, 386. 24	$35, 387, 512. 86	$6, 119, 713. 64	$83, 446, 159. 96
May, 1917	28, 660, 148. 60	107, 601, 090. 34	50, 009, 778. 45	11, 996, 371. 78	198, 267, 389. 17
June, 1917 (revised)	18, 686, 805. 14	195, 230, 281. 19	56, 993, 915. 16	14, 814, 156. 47	285, 725, 157. 96
Total Apr. 6, 1917, to June 30, 1917	65, 210, 500. 96	326, 906, 757. 77	142, 391, 206. 47	32, 930, 241. 89	567, 438, 707. 09
July, 1917	15, 805, 129. 91	9, 478, 880. 98	50, 895, 959. 22	7, 747, 666. 17	83, 927, 636. 28
August, 1917	15, 902, 255. 99	4, 248, 091. 69	43, 922, 598. 77	10, 423, 584. 41	74, 496, 530. 86
September, 1917	15, 201, 388. 70	6, 026, 475. 01	41, 265, 393. 95	13, 616, 104. 84	76, 109, 362. 50
October, 1917	13, 647, 946. 24	5, 987, 904. 91	50, 318, 414. 27	20, 504, 025. 14	90, 458, 290. 56
November, 1917	11, 935, 389. 41	6, 720, 898. 26	81, 536, 702. 42	39, 297, 787. 35	139, 490, 777. 44
December, 1917	11, 247, 214. 10	13, 725, 534. 51	61, 425, 075. 62	18, 661, 246. 19	105, 059, 070. 42
January, 1918	12, 163, 216. 06	11, 428, 560. 88	61, 665, 347. 96	18, 099, 084. 97	103, 356, 209. 87
February, 1918	12, 019, 441. 74	13, 200, 936. 38	59, 115, 478. 32	14, 762, 583. 25	99, 098, 439. 69
March, 1918	18, 106, 373. 13	31, 424, 027. 09	89, 635, 237. 66	17, 583, 640. 17	156, 749, 278. 05
April, 1918	16, 445, 531. 99	83, 012, 299. 95	93, 113, 711. 68	16, 747, 600. 64	209, 319, 144. 26
May, 1918	19, 925, 706. 94	342, 104, 796. 75	135, 081, 929. 01	97, 633, 678. 29	594, 746, 110. 99
June, 1918	17, 598, 789. 23	1, 786, 647, 885. 43	104, 052, 171. 39	23, 473, 167. 68	1, 931, 772, 013. 78
Total for fiscal year 1918	179, 998, 383. 49	2, 314, 006, 291. 84	872, 028, 020. 27	298, 550, 169. 10	3, 664, 582, 864. 70
July, 1918	15, 837, 889. 72	497, 496, 376. 62	105, 948, 666. 11	22, 594, 804. 69	641, 877, 137. 14
August, 1918	14, 175, 802. 76	30, 795, 666. 13	83, 736, 123. 50	23, 544, 439. 33	152, 252, 031. 72
September, 1918	12, 719, 024. 43	36, 308, 166. 21	89, 005, 937. 44	13, 851, 525. 72	151, 884, 653. 80
October, 1918	11, 453, 096. 69	30, 136, 620. 58	93, 327, 251. 94	16, 663, 790. 75	151, 580, 759. 96
November, 1918	12, 583, 861. 29	28, 820, 184. 49	99, 743, 394. 83	169, 846, 822. 58	310, 994, 263. 19
December, 1918	9, 681, 907. 59	61, 916, 648. 37	117, 658, 483. 35	14, 645, 224. 92	203, 902, 264. 23
January, 1919	12, 732, 514. 54	43, 141, 373. 49	112, 287, 675. 18	27, 681, 278. 13	195, 842, 841. 34
February, 1919	14, 979, 078. 02	30, 341, 342. 50	94, 310, 163. 04	23, 128, 580. 27	162, 759, 163. 83
March, 1919	17, 876, 270. 46	1, 129, 821, 269. 04	118, 240, 897. 00	31, 910, 509. 72	1, 297, 848, 946. 22
April, 1919	20, 141, 486. 97	107, 696, 034. 35	135, 059, 064. 46	159, 655, 714. 78	422, 552, 300. 56
May, 1919	20, 896, 644. 65	50, 614, 139. 20	115, 265, 091. 71	92, 486, 335. 12	279, 262, 210. 68
June, 1919	21, 380, 290. 27	971, 695, 866. 31	131, 919, 143. 11	56, 505, 264. 07	1, 181, 500, 563. 76
Total for fiscal year 1919	184, 457, 867. 39	3, 018, 783, 687. 29	1, 296, 501, 291. 67	652, 514, 290. 08	5, 152, 257, 136. 43
July, 1919	20, 498, 245. 83	44, 043, 414. 30	110, 038, 601. 29	53, 201, 441. 60	227, 781, 703. 02
August, 1919	21, 053, 662. 06	28, 615, 312. 08	113, 817, 095. 93	105, 052, 760. 89	268, 538, 830. 96
September, 1919	24, 724, 214. 48	944, 897, 366. 34	140, 757, 151. 39	32, 176, 712. 96	1, 142, 555, 445. 17
October, 1919	24, 276, 476. 04	34, 903, 495. 13	139, 333, 735. 95	58, 596, 048. 11	257, 109, 755. 23
November, 1919	27, 389, 468. 44	45, 556, 651. 10	113, 895, 464. 23	54, 544, 178. 14	241, 385, 761. 91
December, 1919	23, 826, 407. 45	905, 307, 590. 08	125, 797, 975. 12	37, 759, 624. 98	1, 092, 691, 597. 63
January, 1920	28, 628, 890. 50	46, 726, 771. 16	136, 095, 229. 78	43, 887, 135. 23	255, 338, 026. 67
February, 1920	26, 778, 888. 11	49, 276, 050. 40	118, 057, 904. 94	34, 814, 497. 32	229, 527, 340. 77
March, 1920	34, 377, 633. 56	918, 879, 463. 52	117, 251, 480. 30	28, 532, 046. 38	1, 099, 040, 623. 76
April, 1920	27, 917, 798. 24	105, 823, 389. 13	107, 873, 045. 02	75, 644, 088. 00	317, 258, 320. 39
May, 1920	29, 129, 227. 36	76, 508, 712. 17	108, 538, 599. 91	43, 324, 835. 88	257, 501, 375. 32
June, 1920	34, 301, 738. 32	744, 411, 072. 34	128, 026, 003. 05	399, 097, 794. 34	1, 305, 836, 608. 05
Total for fiscal year 1920	322, 902, 650. 39	3, 944, 949, 287. 75	1, 460, 082, 286. 91	966, 631, 163. 83	6, 694, 565, 388. 88
July, 1920	30, 694, 297. 30	64, 917, 691. 90	107, 670, 917. 32	27, 083, 618. 93	230, 366, 525. 45
August, 1920	29, 327, 518. 88	59, 551, 871. 46	144, 710, 931. 34	164, 810, 344. 05	398, 400, 665. 68
September, 1920	24, 036, 208. 77	716, 183, 757. 45	147, 344, 343. 27	23, 742, 762. 32	911, 307, 071. 81
October, 1920	25, 599, 595. 60	55, 685, 825. 49	122, 805, 403. 43	15, 943, 980. 45	220, 034, 804. 97
November, 1920	21, 884, 850. 58	61, 193, 604. 70	124, 868, 247. 10	67, 474, 109. 87	275, 420, 812. 25
December, 1920	18, 554, 794. 65	670, 671, 179. 54	122, 664, 468. 74	120, 098, 954. 39	931, 989, 397. 32
January, 1921	17, 485, 532. 78	54, 223, 322. 41	111, 432, 952. 10	34, 186, 441. 81	217, 328, 249. 10
February, 1921	21, 152, 665. 92	70, 511, 047. 03	111, 599, 939. 74	45, 299, 962. 09	248, 563, 614. 78
March, 1921	29, 203, 977. 43	727, 543, 549. 04	95, 867, 254. 03	69, 012, 822. 22	921, 627, 602. 72
April, 1921	40, 417, 183. 94	108, 380, 928. 20	90, 985, 753. 69	56, 386, 799. 99	296, 170, 665. 82
May, 1921	25, 485, 133. 15	52, 262, 908. 39	94, 812, 476. 67	51, 145, 880. 68	223, 706, 398. 89
June, 1921	24, 722, 632. 05	564, 920, 472. 13	115, 617, 135. 85	44, 756, 912. 09	750, 017, 152. 12
Total for fiscal year 1921	308, 564, 391. 00	3, 206, 046, 157. 74	1, 390, 379, 823. 28	719, 942, 588. 89	5, 624, 932, 960. 91
RECAPITULATION.					
Apr. 6, 1917, to June 30, 1917	65, 210, 500. 96	326, 906, 757. 77	142, 391, 206. 47	32, 930, 241. 89	567, 438, 707. 09
Fiscal year 1918	179, 998, 383. 49	2, 314, 006, 291. 84	872, 028, 020. 27	298, 550, 169. 10	3, 664, 582, 864. 70
Fiscal year 1919	184, 457, 867. 39	3, 018, 783, 687. 29	1, 296, 501, 291. 67	652, 514, 290. 08	5, 152, 257, 136. 43
Fiscal year 1920	322, 902, 650. 39	3, 944, 949, 287. 75	1, 460, 082, 286. 91	966, 631, 163. 83	6, 694, 565, 388. 88
Fiscal year 1921	308, 564, 391. 00	3, 206, 046, 157. 74	1, 390, 379, 823. 28	719, 942, 588. 89	5, 624, 932, 960. 91
Grand totals	1, 061, 133, 793. 23	12, 810, 692, 182. 39	5, 161, 382, 628. 60	2, 670, 568, 453. 79	21, 703, 777, 058. 01

Digitized by Google

TABLE 5b.—*Statement showing classified disbursements of the United States Government, exclusive of the principal of the public debt, by months, from Apr. 6, 1917, to June 30, 1921, as published in daily Treasury statements.*

	Ordinary, including special, except foreign loans.	Foreign loans.	Total.	Deficit.	Surplus.
Apr. 6 to 30, 1917	$79,213,777.20	$200,000,000.00	$279,213,777.20	$195,767,617.24	
May, 1917	119,065,555.96	407,500,000.00	526,565,555.96	328,298,166.79	
June, 1917 (revised)	132,607,295.39	277,500,000.00	410,107,295.39	124,382,137.43	
Total, Apr. to June 30, 1917	330,886,628.55	885,000,000.00	1,215,886,628.55	648,447,921.46	
July, 1917	209,810,845.97	452,500,000.00	662,310,845.97	578,383,209.69	
August, 1917	279,457,364.14	478,000,000.00	757,457,364.14	682,960,833.28	
September, 1917	350,378,285.69	396,000,000.00	746,378,285.69	670,268,923.19	
October, 1917	463,668,752.52	480,700,000.00	944,368,752.52	853,910,461.96	
November, 1917	514,152,057.53	471,929,750.00	986,081,807.53	846,591,030.09	
December, 1917	613,211,859.32	492,000,000.00	1,105,211,859.32	1,000,152,788.90	
January, 1918	720,156,045.69	370,200,000.00	1,090,356,045.69	986,999,835.82	
February, 1918	687,686,985.74	325,000,000.00	1,012,686,985.74	913,588,546.06	
March, 1918	838,293,809.24	317,500,000.00	1,155,793,809.24	999,044,531.19	
April, 1918	927,787,779.23	287,500,000.00	1,215,287,779.23	1,005,968,634.97	
May, 1918	1,084,195,233.65	424,000,000.00	1,508,195,233.65	913,449,122.66	
June, 1918	1,269,873,702.42	242,700,000.00	1,512,573,702.42		419,198,311.36
Total for fiscal year 1918	7,958,672,721.14	4,738,029,750.00	12,696,702,471.14	[1]9,032,119,606.44	
July, 1919	1,264,797,654.44	343,485,000.00	1,608,282,654.44	966,405,517.30	
August, 1918	1,526,263,223.02	279,250,000.00	1,805,513,223.02	1,653,261,191.30	
September, 1918	1,275,114,285.27	282,150,000.00	1,557,264,285.27	1,405,379,631.47	
October, 1918	1,175,762,260.99	489,100,000.00	1,664,862,260.99	1,513,281,501.03	
November, 1918	1,656,299,611.23	278,949,697.70	1,935,249,308.93	1,624,255,045.74	
December, 1918	1,671,923,855.48	389,052,000.00	2,060,975,855.48	1,857,073,591.25	
January, 1919	1,672,100,149.83	290,250,800.00	1,962,350,949.83	1,766,506,106.49	
February, 1919	1,044,516,601.32	145,397,302.30	1,189,913,903.62	1,027,154,739.79	
March, 1919	1,057,461,785.51	322,350,000.00	1,379,811,785.51	81,962,839.29	
April, 1919	1,019,319,698.11	409,608,608.27	1,428,928,306.38	1,006,376,005.82	
May, 1919	917,425,614.44	194,911,857.29	1,112,337,471.73	833,075,261.05	
June, 1919	754,639,949.83	54,750,000.00	809,389,949.83		372,110,613.93
Total for fiscal year 1919	15,035,624,689.47	3,479,255,265.56	18,514,879,955.03	[1]13,362,622,818.60	
July, 1919	878,623,570.34	97,650,000.00	976,273,570.34	748,491,867.32	
August, 1919	711,521,798.39	54,275,945.99	765,797,744.38	497,258,913.42	
September, 1919	565,215,630.24	102,006,000.00	667,221,630.24		475,333,814.93
October, 1919	526,194,278.58	50,154,927.00	576,349,205.58	319,239,450.35	
November, 1919	358,832,293.58	10,000,000.00	368,832,293.58	127,446,531.67	
December, 1919	465,776,623.92	26,634,041.10	492,410,665.02		600,280,932.61
January, 1920	333,293,696.44	15,000,000.00	348,293,696.44	92,955,669.77	
February, 1920	275,457,433.96	20,000,000.00	295,457,433.96	65,930,093.19	
March, 1920	525,540,559.40	12,000,000.00	537,540,559.40		561,500,064.36
April, 1920	489,713,336.50	15,616,114.00	505,329,450.50	188,071,130.11	
May, 1920	380,475,235.43	15,000,000.00	395,475,235.43	137,973,860.11	
June, 1920	471,362,356.34	3,000,000.00	474,362,356.34		831,474,251.71
Total for fiscal year 1920	5,982,006,813.12	421,337,028.09	6,403,343,841.21		[1]291,221,547.67
July, 1920	295,501,839.31	11,000,000.00	306,501,839.31	76,135,313.86	
August, 1920	417,101,594.56	30,469,467.89	447,571,062.45	49,170,396.77	
September, 1920	481,044,489.25	15,732,165.64	496,776,654.89		414,530,416.92
October, 1920	426,497,372.37		426,497,372.37	206,462,567.40	
November, 1920	426,092,313.00		426,092,313.00	150,671,500.75	
December, 1920	404,575,091.03		404,575,091.03		527,414,306.29
January, 1921	388,179,272.33		388,179,272.33	170,851,023.23	
February, 1921	351,102,030.45		351,102,030.45	102,538,415.67	
March, 1921	519,781,297.00	16,695,063.91	536,476,360.91		385,151,241.81
April, 1921	494,091,189.49		494,091,189.49	197,920,523.67	
May, 1921	368,450,545.01		368,450,545.01	144,744,146.12	
June, 1921	469,613,958.06		469,613,958.06		280,403,194.06
Total for fiscal year 1921	5,042,030,991.86	73,896,697.44	5,115,927,689.30		[1]509,005,271.61
RECAPITULATION.					
Apr. 6 to June 30, 1917	330,886,628.55	885,000,000.00	1,215,886,628.55	648,447,921.46	
Fiscal year 1918	7,958,672,721.14	4,738,029,750.00	12,696,702,471.14	9,032,119,606.44	
Fiscal year 1919	15,035,624,689.47	3,479,255,265.56	18,514,879,955.03	13,362,622,818.60	
Fiscal year 1920	5,982,006,813.12	421,337,028.09	6,403,343,841.21		291,221,547.67
Fiscal year 1921	5,042,030,991.86	73,896,697.44	5,115,927,689.30		509,005,271.61
Grand total	34,349,221,844.14	9,597,518,741.09	43,946,740,585.23	[1]22,242,963,527.22	

[1] Net.

Digitized by Google

THIRD ECONOMIC PERIOD—AUGUST, 1918, TO MARCH, 1919.

TEMPORARY DEFLATION.

The third economic period commenced August, 1918, and extended to March, 1919, and was a period of hesitation and some temporary deflation and price decline.

It became apparent in August, 1918, that the war would end with an allied victory. It was generally thought that the return of 4,000,000 men from the Army to industry, the conversion of war plants to purposes of peace, the relocation of employees, and the general let down from maximum war production and reduction of export trade would bring about a condition under which deflation of prices would take place automatically. There were many factors in the situation which indicated that this expectation would be realized. Prices began to decline. By March, 1919, the general index of commodity prices had declined as shown in Table 6.

TABLE 6.—*Price indices showing decline from August, 1918, to February, 1919.*

Commodity.	August, 1918.[1]	February, 1919.[1]	Per cent of change.
Farm products	230	218	− 5
Food, etc	191	196	+ 3
Cloths and clothing	252	223	−11
Fuel and lighting	166	169	+ 2
Metals and metal products	185	168	− 9
Lumber and building materials	157	163	+ 4
Chemicals and drugs	222	185	−16
House-furnishing goods	221	218	− 1
Miscellaneous	191	208	+ 9
All commodities	202	197	− 2

[1] Source: Bureau of Labor Statistics.

Speculation on the New York Stock Exchange likewise declined, the number of transactions in October, 1918, being 20,285,334 shares, as compared with 11,634,561 shares in January, 1919. The volume in January, 1919, was about one-third of what it had been at the maximum of 1916.

Many of the indices usually consulted with a view of determining the trend of business conditions seemed to indicate the approach of a period of business reaction and deflation. The production of coal, coke, pig iron, and crude steel fell off very markedly during this period. The index of employment indicated a decline, as did the sales of retail goods, shipments and receipts of lumber, and the tonnage of vessels cleared. Exports began to fall off slightly.

Loans and discounts and deposits of National banks remained practically stationary during this period and from month to month indicated a slight decline. Federal reserve notes in circulation declined slightly during the period, as did also the general stock of money in circulation.

No action was taken by the Federal reserve banks during this period in the direction of influencing a reduction of loans and discounts by the adoption of higher discount rates, but in lieu of the adoption of this policy the Federal reserve banks continued the policy of discouraging the expansion of loans and discounts on the part of member banks by what is described as "direct action."

Digitized by Google

This took the form of letters and circulars sent out by the Federal Reserve Board and various Federal reserve banks to member banks, admonishing them to confine loans and discounts to essential requirements and to discourage the making of speculative and nonessential loans.

FOURTH ECONOMIC PERIOD—MARCH, 1919, TO JUNE, 1920.

POSTWAR INFLATION.

Beginning in March, 1919, the situation changed, and we entered upon a period of tremendous inflation, increase in prices, unbridled speculation, and extravagance. This change in the situation was first apparent on the stock exchange. By March, 1919, transactions on the stock exchange numbered 21,174,184 shares, and by May had increased to 34,236,574 shares, and by October, 1919, had reached a total of 36,886,384 shares. The high wages of the war period continued. The personal restraints which considerations of patriotism had induced the people to adopt for themselves were in large measure abandoned. The restraints which the Government imposed upon individuals and upon industry, including those of the Food Administration, the War Industries Board, the Railroad Administration, the Capital Issues Committees, and the various other measures designed to restrict personal expenditures and use of credit were one by one removed. Thousands of persons who had bought Liberty bonds sold these bonds or converted them by one method and another, and spent the proceeds on personal indulgences or made investments in high-priced land, worthless oil stocks, etc. There was an orgy of spending. Merchants could not get goods from the manufacturer as fast as they could be sold.

Prices rose with tremendous rapidity, as indicated by the indices of various commodities of the Bureau of Labor Statistics. A comparison of the indices of prices for March, 1919, with May, 1920, is shown in Table 7.

TABLE 7.—*Price indices showing rise from March, 1919, to May, 1920.*

Commodity.	March, 1919.	May, 1920.	Commodity.	March, 1919.	May, 1920.
Farm products	228	244	Lumber and building materials	165	341
Food, etc	208	287	Chemicals and drugs	183	215
Cloths and clothing	216	347	House-furnishing goods	213	339
Fuel and lighting	168	235	Miscellaneous	217	248
Metals and metal products	162	193	All commodities	201	272

Loans and discounts of all banks, State and National, exclusive of savings banks, increased from June, 1919, to June, 1920, from $21,950,029,000 to $27,368,231,000, an increase of $5,418,202,000, or 24.7 per cent. Loans and discounts of national banks during the same period increased from $11,010,206,000 to $13,611,416,000, an increase of $2,601,210,000, or 23.6 per cent. During the same period loans and discounts and bills bought by Federal reserve banks increased from $2,122,598,000 to $2,830,979,000, an increase of $708,381,000, or 33.4 per cent. Federal reserve notes increased

Digitized by Google

during the period from $2,499,180,000 to $3,116,718,000, an increase of $617,538,000, or 24.7 per cent.

A little more accurate picture of the expansion which took place during this period is obtained by taking national-bank and Federal reserve figures for the period from March, 1919, to June, 1920. During this period loans and discounts of national banks increased from $10,080,083,000 to $13,611,416,000, an increase of $3,531,333,000, or 35 per cent; while loans and discounts and bills bought by Federal reserve banks increased from $2,134,347,000 to $2,830,979,000, an increase of $696,632,000, or 32.6 per cent.

Federal reserve notes during this period increased from $2,521,776,000 to $3,116,718,000, an increase of $594,942,000, or 23.5 per cent. In the same period the general stock of money increased from $7,566,300,000 to $7,804,528,000, an increase of $238,228,000, or 3.1 per cent.

All commodity prices, as indicated by the Bureau of Labor Statistics indices, increased 33.3 per cent, and farm products increased 6.5 per cent. While exports had begun to fall off in some commodities during this period, notably in war materials, and in the latter part of the period in farm products, a balance of $2,500,000,000 of funds placed by the United States Government to the credit of foreign governments enabled Europe to complete payments for goods under contract, and to continue its purchases in this country for a period of several months. This purchasing on the part of foreign governments during the period undoubtedly helped to sustain the prices of commodities in this country during this time.

A review of the period preceding our entrance into the war, the period during the war, and the subsequent period of inflation, following the war, shows that in general prices increased during the pre-war period approximately 75 per cent, while the expansion in banking, in loans and discounts, was about 40 per cent; that the increases in prices during the war period was about 17 per cent, while expansion of loans and discounts of banks was about 14 per cent. During the period of inflation following the war prices increased 33 per cent, while bank loans expanded 30 per cent.

The increases in loans and discounts of banks and of the Federal reserve banks which accompanied the period of inflation and expansion following the slight declines which succeeded the war were augmented by the flotation of the Victory loan in June, 1919. The possibilities of further inflation resulting from the flotation of the Victory loan brought sharply forward the question of checking expansion and inflation, spending and speculation, by the adoption of a policy on the part of the Federal reserve banks of higher discount rates.

The Government's revenues in 1919 overtook its expenditures, enabling a reduction in the net debt. This released credit which could be applied to reducing borrowings from the Federal reserve banks if higher rates rendered it unprofitable for such credit to be employed in speculative enterprises.

At this time the total expenditures of the Government for ordinary and war purposes from the beginning of the war had reached a total of $27,806,546,698.23, of which $6,933,524,926.13 had been raised by taxation. In view of the enormous drain on the resources of the country, in credit, savings, and current production for war purposes,

Digitized by Google

a further bond issue could not be floated without added inflation or manufacture of credit, which could only be accomplished through the medium of the Federal reserve system.

Again, inasmuch as a willingness on the part of the Federal reserve banks to furnish the money necessary to carry the bonds to the member banks at a rate of interest lower than the rate carried by the bonds was thought by the officials of the Treasury Department to be essential to the success of the issue, a policy of raising the discount rates in advance of the flotation of the Victory loan might have greatly diminished the success of that loan, if, indeed, it had not compelled its failure. (See address of Hon. R. C. Leffingwell, Assistant Secretary of the Treasury, before the Academy of Political Science at New York, April 30, 1920. Part 13, Hearings, p. 454.)

A policy of higher discount rates could have been adopted by the Federal reserve banks, notwithstanding the flotation of the Victory loan, if the Treasury Department had been willing to float this loan at a rate of interest high enough to permit an increase in the rediscount rate. Great difficulties were foreseen by the Treasury Department in this undertaking. If the Victory loan had been floated by the Treasury Department on a basis of an interest rate comparable with current rates on other taxable investments, or on certificates of indebtedness for short periods or at rates comparable with the interest rate on acceptances, which at that time was about 4¼ per cent or on commercial borrowings, which at that time was about 5½ per cent, the pressure already felt at that time by the Treasury Department to refund the prior issues of Government bonds on the basis of a high interest rate on the Victory loan issue would have greatly increased and possibly been irresistible. In addition, the flotation of the Victory loan at this time on the basis of a high interest rate would have had a tendency to ultimately increase interest rates all along the line, and to depreciate the value of the bonds previously issued at the lower rates of interest. Again, it might have resulted in precipitating a liquidation of large amounts of securities other than Government bonds, and the depreciation of vast quantities of general securities held by savings banks, trust companies, insurance companies, etc. Thus, the advantages of the high discount rates, which might have been used to prevent speculation and inflation during this period, yielded to the apprehensions of the Treasury Department.

The commission is of the opinion that the difficulties anticipated by the Treasury Department should not have controlled in this period and that the discount policy of the Federal Reserve Board and the Federal reserve banks should not have yielded to the apprehension of the Treasury Department.

The commission believes that had discount rates been raised by the Federal reserve banks promptly and progressively beginning with the spring of 1919, much of the inflation, expansion, speculation, and extravagance which characterized the following 12 months or more might have been greatly retarded, if not wholly prevented.

Loans and discounts of member banks and of Federal reserve banks continued to expand in spite of the policy of direct remonstrance and repeated warnings of the Federal Reserve Board and the Federal reserve banks. Yet no action in the direction of restriction of expansion, inflation, and speculation by increases in discount rates

Digitized by Google

was taken by the Federal reserve banks or the Federal Reserve Board until December, 1919, when slight advances were made. These advances were followed in January by more radical increases and by further advances during the remainder of 1920.

In the meantime expansion, inflation, extravagance, and speculation continued and prices soared to previously unheard of levels. Sharp advances in discount rates at the beginning of this period would not only have served as a warning to banks and their customers but would also have served to check the forces, both economic and psychological, that were combining to produce an era of expansion, inflation, speculation, extravagance, and high prices unparalleled in the history of this country, or perhaps in any other.

It does not, of course, follow that deflation must be equivalent to inflation, but it is altogether probable, if it is not wholly certain, that had a sound policy been adopted by the Federal Reserve Board and the Federal reserve banks at the beginning of this period the processes of liquidation would have been less precipitous and the decline less abrupt and the attendant hardships and losses upon banks, communities, and individuals correspondingly diminished.

FIFTH ECONOMIC PERIOD—JUNE, 1920, TO JUNE, 1921.

DEFLATION AND LIQUIDATION.

In the spring of 1920 evidences that deflation was at hand began to multiply. Exports of farm products, particularly, continued to decline in volume. Domestic consumption in many lines also began to decline; the stream of production flowing from the farmer to the consumer began to back up in the channels of distribution, although higher discount rates and tight money, like dikes erected along the banks of the stream, served as influences to keep goods flowing in the channels of trade, notwithstanding the obstacles of declining prices and slackening demand. As demand fell off the difficulties of disposing of the crop of 1920 increased. Prices fell far below the costs of production, which were higher in 1920 than in any preceding year. The receipts from farm products grew constantly less and less adequate to liquidate the indebtedness against them and to provide for new production. More and still more credit was required to finance new production and to carry goods of 1920 production until they could be moved. The process of forcing these goods upon the market, in the face of lessening demand, served to still further force down prices, and as prices dropped the proceeds of the sales of goods became less and less adequate to pay the accumulated debts made in producing them. Thus customary credit requirements were embarrassed because costs of production could not be liquidated at current selling prices, and the interest costs of carrying the goods until a better market could be obtained had to be added to the losses incident to declining prices.

Toward the end of 1919 the demands of the consuming public reached such proportions as to develop on the part of the retailers a kind of buyers' panic. A supply of goods adequate to supply this extravagant demand was not forthcoming. Then the wholesalers and merchants began to experience a sudden and marked increase in their orders, out of all proportion to even very prosperous conditions.

Digitized by Google

This was the direct result of duplication. Many large firms finding themselves unable to supply their customers, had adopted a policy of allocation, giving to the buyers only a percentage of their orders, and endeavoring to distribute the supply as equitably as possible. This forced or led many retailers to place orders with a number of different firms, where perhaps they had dealt with but one hitherto. By placing two, three, or four orders for the same amount of goods they were able then to obtain, perhaps, in this way the full amount of the supply they desired.

This led to a runaway market, a purely sellers' market, and gave a wholly fictitious impression of the probable demands of the coming year. As the mills running overtime began to catch up with these orders, and to complete deliveries, the retailers suddenly found themselves with far larger stocks than they had anticipated, while on the other hand the rapid rise in retail prices had brought about a distinct, though probably at the time grossly exaggerated, curtailment of the buying power of the public. It was inevitable that this bubble of inflated prices must burst at some time, and the first warnings that it was coming were found in the cancellation of these duplicated orders. These cancellations, moderate at first, soon became, as the fall in prices progressed, simply an avalanche, and so far as the most careful investigation discovers, it was this wave of cancellation, the fright which accompanied it, and the exhaustion of credit which preceded it which were the main or precipitating causes which carried prices down in such a headlong fashion. While there were probably many to anticipate a fairly drastic reaction from the unexampled boom of 1919–20, there were few probably, and possibly none, really to anticipate the tremendous decline which actually took place. Records of price changes run back now to the beginning of the nineteenth century. In this period of 120 years the debacle of 1920–21 was without parallel.

All of these conditions contributed to forcing upward the loans and discounts of State and National banks, and the deposit and currency liabilities of the Federal reserve banks. By November, 1920, loans and discounts of national banks had reached the total of $13,764,721,000; the total bills discounted and bills bought by Federal reserve banks had reached the total of $2,983,103,000, and Federal reserve notes $3,325,538,000.

This period was characterized by the passing of conditions which influenced the adoption of the policy of fixing discount rates at the Federal reserve bank at a point below the rates upon the paper to which they applied. Tables 8 and 9, page 47, show the changes in the discount rates of the Federal reserve banks during 1919 and 1920 on 16–90 day commercial paper, and on paper secured by Liberty bonds and Victory notes included within 16 to 90 day paper.

Digitized by Google

TABLE 8—*Changes in discount rates on commercial paper maturing within 16 to 90 days, 1919–20.*

Federal reserve bank.	Changes effective 1919.			Changes effective 1920.										
	Jan. 1.	Nov. 10.	Dec. 26.	Jan. 1.	Jan. 3.	Jan. 12.	Jan. 23.	Jan. 24.	Jan. 26.	Jan. 29.	Feb. 2.	June 1.	June 4.	Nov. 1.
Boston	4½			4½			6						7	
New York	4½			4½			6					7		
Philadelphia	4½			4½			6							
Cleveland	4½			4½		5				6				
Richmond	4½			4½			6							
Atlanta	4½			4½					6					7
Chicago	4½			4½				6				7		
St. Louis	4½			4½				6						
Minneapolis	[1] 4½			[1] 4½					6			7		
Kansas City	5			5	5½		6							
Dallas	[1] 4½	5		5							6			
San Francisco	5		4½	4½							6			

[1] Rate of 5 per cent for maturities 61 to 90 days.

TABLE 9—*Changes in discount rates on paper secured by Liberty bonds and Victory notes maturing within 16 to 90 days—1919–20.*

[Source: Annual Report Federal Reserve Board, 1919, pp. 9-10, 1920, p. 60.]

Federal reserve bank.	Effective 1919.													
	Jan. 1.	Nov. 4.	Nov. 5.	Nov. 6.	Nov. 7.	Nov. 10.	Nov. 12.	Nov. 17.	Dec. 12.	Dec. 13.	Dec. 15.	Dec. 16.	Dec. 17.	Dec. 19.
Boston	4½	4½							4½					
New York	4½	4½							4½					
Philadelphia	4½			4½								4½		
Cleveland	4½					4½								
Richmond	4½					4½					4½			
Atlanta	4½					4½							4½	
Chicago	4½		4½							4½				
St. Louis	4½				4½									4½
Minneapolis	4½			4½						[1] 4½				
Kansas City	4½	4½					4½				5			
Dallas	4½					4½					5			
San Francisco	4½							4½						

Federal reserve bank.	Effective 1920.													
	Jan. 1.	Jan. 3.	Jan. 12.	Jan. 23.	Jan. 24.	Jan. 26.	Jan. 28.	Feb. 2.	May 1.	May 3.	May 13.	June 1.	June 4.	June 7.	Sept. 28.
Boston	4½			5½									6		
New York	4½			5½								6			
Philadelphia	4½			5½											
Cleveland	4½		5				5½				5½				
Richmond	4½			5½								6			
Atlanta	4½				5½										
Chicago	4½				5½				6						
St. Louis	4½				5½										
Minneapolis	[1] 4½					5½			6						
Kansas City	5	5½													6
Dallas	5														
San Francisco	4½									5½				6	

[1] Rate of 5 per cent for maturities 61 to 90 days.

It is to be noted that the increases effected in this period were more radical than any previously adopted. This is particularly true

Digitized by Google

of the increase of the rate on member banks' notes secured by Government obligations, which in some cases were raised from 4¾ per cent to 5 per cent, and in other cases from 4¾ per cent to 5½ per cent, and later to 6 per cent. These increases were in the direction of the general policy of uniform rates upon all paper of the same maturity, without regard to the collateral supporting it.

This result is claimed to be in line with sound central banking practice. The theory back of this action was that all loans for similar periods made by Federal reserve banks have the indorsement of member banks, and are presumed to be good, whether supported by collateral in the form of commercial paper or Government paper, and, therefore, should pay the same rate of discount.

In other words, the difference in rate should be based upon the time which paper has to run, rather than upon the character of the collateral supporting it. In view of the fact that 66 per cent of the borrowings of member banks at this time were based upon Government paper, the increase in the discount rate of the Federal reserve banks was immediately effective in compelling member banks to dispose of much of the paper of this character which they held. This released the funds invested in war paper, and made possible the application of such funds to a reduction of the member banks' borrowings with the Federal reserve banks. While the theory upon which this action was taken is doubtless essentially sound and in line with central banking practice, its application at this time resulted in hardship upon some member banks, and was, perhaps, needlessly drastic.

As previously indicated, as a part of the policy of the Federal reserve banks in aid of Treasury finance, a preferential discount rate had been made by the Federal reserve banks, in favor of paper secured by Government war bonds. The effect of the increase in discount rates on notes secured in this way was, first, to penalize the member bank borrowing for the benefit of its customers upon Government securities owned by it; second, to penalize the banks loaning at low rates of interest to customers on their notes secured by Government obligations; and third, to destroy the advantage of Government bonds as a basis for loans by member banks from Federal reserve banks, and to induce liquidation of these bonds by the banks. This liquidation tended to depress the price of Government bonds, as is indicated by the following table.

Table 10, below, shows the movement of Liberty bond prices since January, 1919:

TABLE 10—*Monthly average of three loans (4¼s), second, third, and fourth.*

[Source: Secretary of the Treasury.]

	1919	1920	1921		1919	1920	1921
January	95.31	92.46	88.22	July	94.36	86.64	88.4
February	94.58	91.33	87.76	August	93.90	86.75	89.1
March	94.32	90.81	88.0	September	94.19	86.67	.....
April	94.17	89.35	88.4	October	94.57	89.25	.....
May	94.85	86.57	88.4	November	93.47	87.88	.....
June	94.77	87.07	88.3	December	92.60	85.99	.....

The rapid decline in the holdings of Government war bonds by member banks is indicated by Table 11, on page 49, which shows the proportion of loans and discounts of Federal Reserve banks, of paper secured by Government bonds, compared with the loans and dis-

Digitized by Google

counts secured by commercial paper. An examination of this table supports the conclusion that while total holdings of bills discounted and bought continued to increase until October 29, 1920, holdings of discounts and bills secured by Government paper began to decline in March, 1920. The ratio of holdings of loans and discounts secured by Government paper to holdings of discounts and bills continued to decline with some irregularities during all of the period and until May, 1921.

TABLE 11.—*Total holdings of discounted bills compared with holdings of discounted bills secured by Government war obligations (January, 1920, to May, 1921).*

	Total holdings of discounted bills.	Index of total holdings of bills (average 1920=100).	Holdings of discounted bills secured by Government war obligations.	Index of bills secured by Government war obligations (average 1920=100).	Ratio of bills secured by Government war obligations to total bills, in percentages.
1920.					
Jan. 30	$2,174,357	85.0	$1,457,892	109.5	66
Feb. 27	2,453,511	96.0	1,572,980	118.1	64
Mar. 26	2,449,230	95.8	1,441,015	108.2	59
Apr. 30	2,535,071	99.1	1,465,320	110.1	58
May 28	2,519,431	98.5	1,447,962	108.8	57
June 25	2,431,794	95.1	1,277,980	96.0	53
July 30	2,491,630	97.4	1,241,017	93.2	50
Aug. 27	2,667,127	104.3	1,314,830	98.8	49
Sept. 24	2,704,464	105.8	1,220,423	91.7	45
Oct. 29	2,801,397	109.6	1,203,905	90.4	43
Nov. 26	2,735,400	107.0	1,192,425	89.6	44
Dec. 30	2,719,134	106.3	1,141,036	85.7	42
Average for 1920	2,556,871	100.0	1,331,399	100.0	52
1921.					
Jan. 31	2,457,116	96.1	1,040,365	78.1	42
Feb. 28	2,389,510	93.5	997,968	75.0	42
Mar. 31	2,233,104	87.3	970,961	72.9	43
Apr. 30	2,076,569	81.2	937,652	70.4	45
May 31	1,907,913	74.6	790,744	59.4	41

The course of the prices of Liberty bonds compared with British war bonds, 10 railroad bonds, and 10 industrial bonds, is indicated by chart A on page 50.

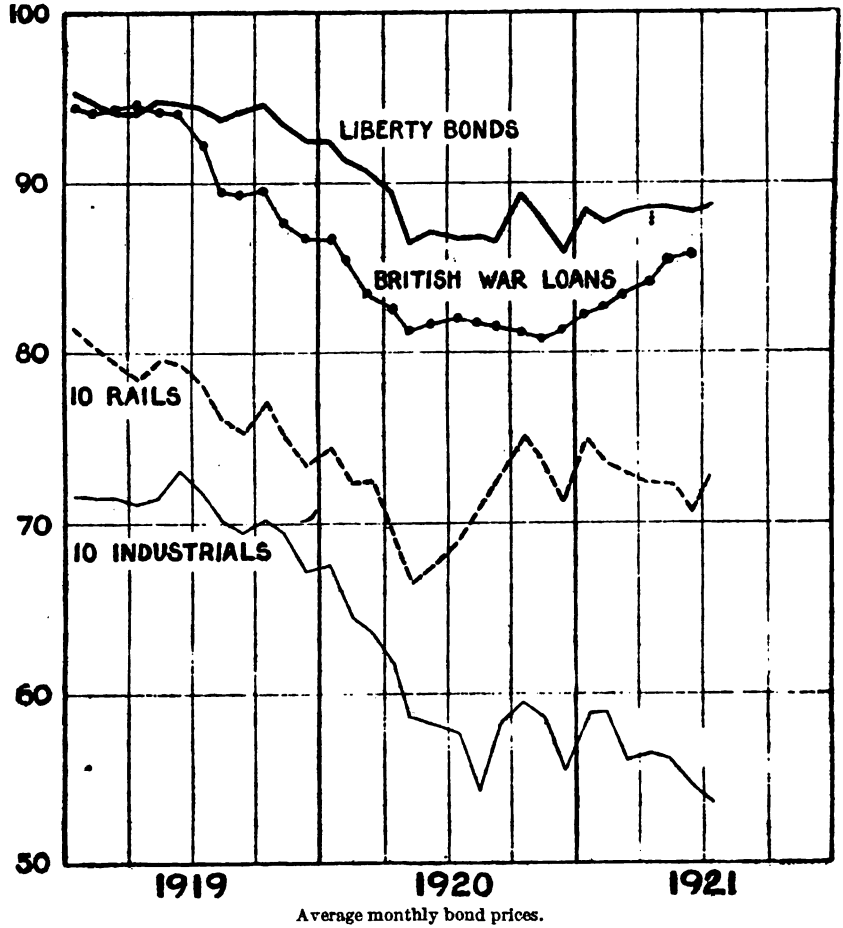
During such a period, sharp and of short duration, of unusual expansion and contraction, it is probable that a line representing the fluctuation of loans and discounts of banks, a second line representing fluctuation of deposits and currency issues of the Federal reserve banks, and a third line representing the changes in prices of commodities, would tend to run substantially and in general direction parallel with each other, and would rise and fall in large measure together. This assumes that the third line, representing prices, could be made to reflect quantity of goods multiplied by prices, current stocks combined with current prices. If the chart, therefore, which indicates the actual relation between these factors, chart B, on page 51, is so modified as to indicate a continued increase of loans and discounts while prices fall, it is apparent that the strain upon credit becomes greater and greater. It seems clear if these lines—the third of which is hypothetical—should thus run normally parallel to each other and should rise and fall relatively, that the point of greatest stress upon the credit of the country would occur at the point at which the line indicating loans and discounts and currency issues and the line indicating prices and stocks of goods tended to diverge and were the farthest apart.

70678—H. Rept. 408, pt 2, 67-1——4

Digitized by Google

It is also apparent that at some point, if this condition, represented by the divergence of the lines representing credit on the one hand and the volume of prices and goods on the other, could conceivably continue, the credit structure would break, with resulting bank failures and panic; that is to say, as prices fall and loans and discounts continue to increase in volume, the margin between the volume of goods and prices on the one hand and loans and discounts on the other diminishes.

CHART A.—COURSE OF THE PRICES OF LIBERTY BONDS COMPARED WITH BRITISH WAR BONDS, RAILROAD BONDS, AND INDUSTRIAL BONDS.



Average monthly bond prices.

It is evident that debts must be paid ultimately out of goods on hand and to be produced. Therefore, the higher the price of the goods in relation to the debts to be paid, the more easily the debts may be paid off. Or, the more debts there are to be paid when the prices fall, the more difficult it will be to pay the debts.

It is therefore apparent that if credit conditions had become strained and that a drop in prices was inevitable some time in 1920, some action was necessary on the part of the Federal reserve banks and

Digitized by Google

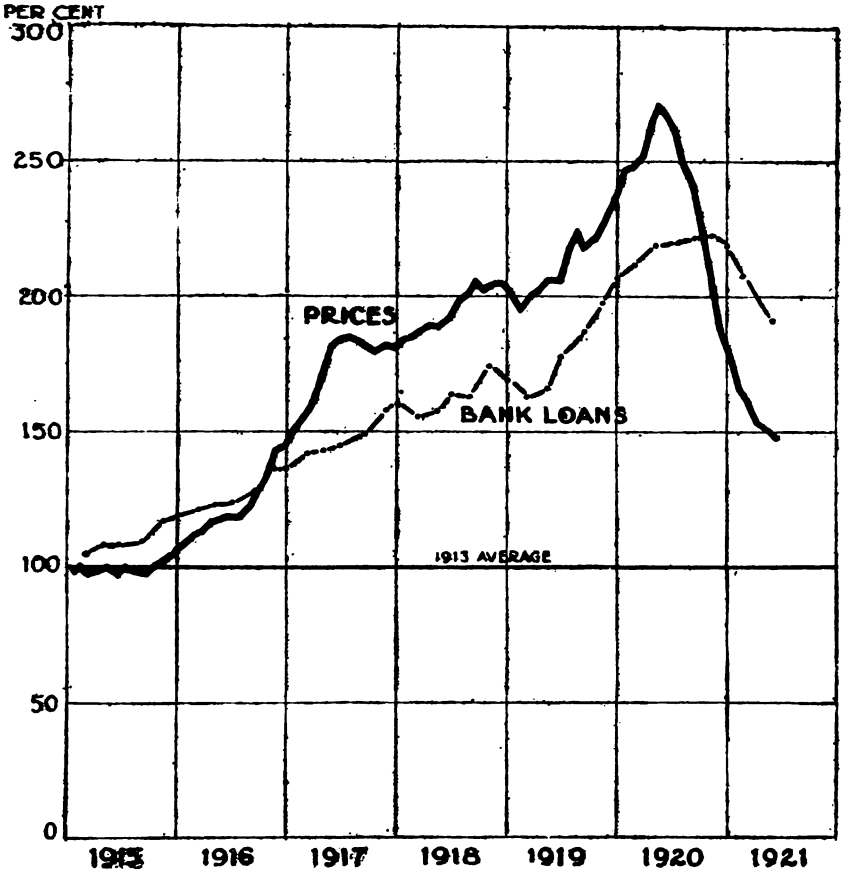
the Federal Reserve Board to bring the debts to be paid into a closer relation with the prices of the goods with which they had to be paid.

During all of the period following the armistice the position of the Federal Reserve Board and the Federal reserve banks was exceedingly

CHART B.—BANK LOANS AND PRICES IN THE UNITED STATES.

Volume of national bank loans compared with wholesale commodity prices (Department of Labor index) Average prices in 1913=100 per cent.

[Source of information: Reports of the Comptroller of the Currency, Monthly Labor Review.]



difficult. On the one hand it was the duty of the board and banks to see that the essential credit requirements of the commercial, manufacturing, and agricultural industry of the country were met as far as they could be. On the other hand, it was necessary that credit for nonessential and speculative purposes would be limited as much as possible, and that the banks were not allowed to extend themselves so that failure would precipitate a financial crash. In other words, it was the job of the Federal reserve system to extend credit without encouraging dangerous expansion of banking liabilities.

The balance between these two positions was extremely delicate, and it is probable that the board and some of the Federal reserve banks, having in mind the preservation of the integrity of the banking

Digitized by Google

system and the prevention of a financial panic, imposed excessive pressure in the direction of reduction, or at least the prevention of expansion of loans and discounts of the member banks. The policy inaugurated during all of this period, and increasingly during the latter half of 1920, was one of restriction of credit.

The alternative of such a policy was the extension of all the credit desired for any purpose. Such a policy would have involved the following dangers: First, the extension of loans and discounts by banks to a point which might later result in a large number of failures; second, the reduction of the reserves of the Federal reserve banks below what Bagehot so expressively calls the "apprehension point"; third, excessive currency issues resulting in depreciated currency; and, fourth, the loss of public confidence in the banking system, runs on the banks, and demands for the redemption of Federal reserve notes in gold.

Whatever the policy of the Federal Reserve Board or Federal reserve banks in the direction of loan restrictions, it could only be effective to the extent that member banks were unable to meet the demands of customers with their own resources and were compelled to borrow at the Federal reserve banks. In other words, discount rates could only be made effective in the restriction of loans and discounts against the bank which was borrowing from its Federal reserve bank. The number of banks borrowing in each district each month, from January, 1920, to August, 1921, is indicated by Table 12:

TABLE 12.—*Number of banks in each district accommodated through discount operations and number of nonborrowing banks.*

	Boston.		New York.		Philadelphia.		Cleveland.		Richmond.		Atlanta.	
	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.
Total:												
1917	218	184	322	348	201	437	160	604	246	284	228	164
1918	269	154	522	201	457	203	320	494	373	192	327	.....
1919	348	79	546	190	494	176	409	420	414	159	347	78
1920	342	91	536	237	484	206	450	410	437	165	372	69
1920, by months:												
January	307	124	375	385	393	288	238	605	264	322	159	269
February	227	204	343	418	374	308	226	620	243	358	153	278
March	239	193	373	394	361	321	239	616	282	312	177	255
April	254	178	390	380	364	340	291	565	317	278	207	219
May	252	180	389	383	374	313	307	551	353	245	254	181
June	246	186	365	396	378	310	296	563	377	234	267	170
July	231	201	347	427	357	331	298	562	390	216	288	168
August	201	231	323	452	365	296	282	582	371	237	294	150
September	219	215	323	454	348	346	258	608	365	245	310	135
October	217	217	306	476	310	386	248	619	340	270	323	126
November	219	215	316	466	325	375	239	632	342	268	335	119
December	256	180	345	435	341	357	272	599	373	238	310	140
1921, by months:												
January	226	.....	329	.....	324	.....	247	.....	352	.....	339	.....
February	225	.....	316	.....	318	.....	237	.....	335	.....	340	.....
March	257	.....	351	.....	330	.....	261	.....	347	.....	355	.....
April	241	.....	351	.....	369	.....	308	.....	373	.....	340	.....
May	232	.....	362	.....	384	.....	324	.....	394	.....	353	.....
June	254	.....	373	.....	399	.....	364	.....	413	.....	359	.....
July	229	.....	326	.....	392	.....	349	.....	415	.....	346	.....
August	217	.....	317	.....	382	.....	363	.....	.....	.....	.....	.....

Digitized by Google

TABLE 12.—*Number of banks in each district accommodated through discount operations and number of nonborrowing banks*—Continued.

	Chicago.		St. Louis.		Minneapolis.		Kansas City.		Dallas.		San Francisco.	
	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.	Number of borrowing banks.	Number of nonborrowing banks.
Total:												
1917	541	559	149	330	284	489	364	594	258	374	156	391
1918	850	.....	278	235	580	286	554	440	548	179	415	216
1919	951	404	305	218	475	416	679	332	607	153	418	260
1920	1,124	270	386	174	704	264	826	240	702	107	578	214
1920, by months:												
January	530	845	204	334	228	695	297	743	210	549	256	471
February	588	786	209	334	221	705	276	774	217	545	261	482
March	625	756	241	306	275	655	314	736	252	509	292	472
April	709	676	271	284	345	598	394	661	317	456	316	456
May	735	651	301	238	441	513	471	586	404	382	361	418
June	739	652	297	266	495	472	494	566	610	194	384	409
July	751	644	287	275	502	474	508	557	519	303	380	421
August	742	754	285	282	488	497	488	583	527	304	414	394
September	772	629	303	264	410	575	547	529	521	317	391	422
October	848	655	310	258	508	484	614	469	542	300	386	433
November	1,026	378	299	270	587	409	658	425	524	322	404	420
December	959	458	318	253	664	336	671	417	600	248	442	390
1921, by months:												
January	943	.....	309	.....	651	.....	710	.....	566	.....	433	.....
February	908	.....	299	.....	662	.....	692	.....	550	.....	429	.....
March	922	.....	306	.....	652	.....	680	.....	570	.....	461	.....
April	1,027	.....	315	.....	675	.....	704	.....	545	.....	477	.....
May	937	.....	321	.....	695	.....	696	.....	570	.....	483	.....
June	947	.....	323	.....	708	.....	670	.....	603	.....	462	.....
July	934	.....	326	.....	705	.....	651	.....	630	.....	471	.....
August [1]	.....	.....	.....	.....	.....	.....	597	.....	640	.....	.....	.....

[1] To the 29th.

This fact is further emphasized by the widely different conditions of individual banks in the same locality. Some banks were greatly extended and borrowing heavily at the Federal reserve bank, in some instances as high as 10 or 15 times the basic line. Some banks were only slightly extended, borrowing moderately from the Federal reserve bank. Other banks were not extended at all, and were not borrowing from the Federal reserve bank in any amount.

Neither the Federal Reserve Board nor the Federal reserve banks could directly control or supervise the loan policy of member banks. They had no power to require a bank to make a loan or to prohibit it from making one. Obviously, they could in no way directly control the loan policies of about 20,000 State banks and trust companies, representing 35 or 40 per cent of the banking resources of the country, that were not members of the Federal reserve system.

Whatever restraining influence was exercised could be exercised only against member banks, and could be exercised only by restriction of credit, either through refusing loans to member banks in individual cases or by pressure of discount rates applied to those member banks whose necessities required them to borrow from the Federal reserve banks. Restraint was exercised in both ways, and there were cases where restraint resulted in hardship not only upon the member banks but upon the member banks' customers.

Digitized by Google

As before indicated, while the policy of the Federal reserve banks reflected the necessity for control, restraint, and restriction, this policy could not be uniformly applied—first, because conditions in various districts were not uniform and the demands for customers' loans in some districts and in some localities were greater in proportion to banking resources than in others; second, because the condition of the member banks was not uniform; and third, because the loan policies of the member banks which are private corporations under the direct management and control of their own directors were influenced more by individual judgment of local conditions and requirements than by consideration of general policy affecting the country as a whole.

In general, the question of whether a loan should be made either by a member bank or a Federal reserve bank must be determined through the exercise of sound judgment and discretion, with due regard to the condition and the ability of both the lender and the borrower. In the case of a loan by a Federal reserve bank to a member bank, this conclusion is subject to certain modifying considerations.

In general, the member bank is the one to determine whether it will borrow from the Federal reserve bank or not. The Federal reserve bank is not obligated to lend any determined amount to the member bank. If a member bank determines that it will borrow, however, the Federal reserve bank must determine whether and how much it will lend. It is only when the member bank borrows or attempts to borrow excessively, say in excess of the amount to which it may be fairly entitled, measured by what it contributes to the resources of the Federal reserve bank, that the question arises as to how much the Federal reserve bank can loan to an individual member bank in justice to that member bank's condition and in justice to the demands of other member banks.

During the period from June, 1920, to June, 1921, prices as indicated by the Bureau of Labor Statistics index, declined as shown in Table 13:

TABLE 13.—*Price indices of commodities showing decline from June, 1920, to June, 1921.*

	June, 1920.	June, 1921.		June, 1920.	June, 1921.
Farm products	243	113	Lumber and building materials	337	202
Food, etc	279	132	Chemicals and drugs	218	166
Cloths and clothing	335	180	House-furnishing goods	362	259
Fuel and lighting	246	157	Miscellaneous	247	159
Metals and metal products	190	133	All commodities	269	148

While loans and discounts both of banks and of Federal reserve banks continued to increase until October, 1920, and currency issues until January, 1921, the net result of the period as reflected in loans and discounts and currency issues was a decline.

In this period, loans and discounts of all banks, State and National, excluding savings banks, declined from $27,368,231 to $24,761,929, a decline of $2,606,302, or 9.5 per cent. Loans and discounts of National banks for the same period decreased from $13,611,416,000 to $12,004,515,000, a decrease of $1,606,901,000, or

Digitized by Google

11.8 per cent. In the same period, total bills discounted and bills bought by Federal reserve banks declined from $2,830,979,000 to $1,803,163,000, a decrease of $1,027,816,000, or 36.3 per cent. Federal reserve notes in circulation declined during the same period from $3,116,718,000 to $2,537,617,000, a decline of $579,101,000, or 18.5 per cent.

The general stock of money in the United States, in the same period, increased from $7,804,528,000 to $8,073,737,000, an increase of $269,209,000, or 3.4 per cent.

In general, loans and discounts decreased during this period 18 per cent, while prices of all commodities decreased 44.9 per cent, and prices of farm products declined 53.9 per cent, as indicated by the Bureau of Labor Statistics index.

The ratio of Federal reserve total cash reserves to net deposits and Federal reserve note liabilities rose from 43.6 during this period to 60.8. This increase in the reserve ratio was partially due to the liquidation of the borrowings of member banks from the Federal reserve banks, and in part to the net importations of gold, which during the fiscal year ending June 30, 1921, amounted to $511,309,539. Table 14 shows imports, exports, net imports and net exports from 1914 to and including the first six months of 1921:

TABLE 14.—*Imports and exports of gold, 1914–1920.*

	Imports.	Exports.	Net imports.	Net exports.
1914	$66,538,659	$112,038,529		$45,499,870
1915	171,368,755	146,224,148	$25,344,607	
1916	494,009,801	90,249,548	403,759,753	
1917	977,176,026	291,921,225	685,254,801	
1918	124,413,483	190,852,224		66,438,741
1919	76,534,046	368,185,248		291,651,202
1920	417,066,273	322,091,208	94,977,065	
1921 (6 months ending June)	352,230,355	23,748,851	373,141,992	

There was a good deal of complaint that the hardships imposed upon the member banks by the policy of high discount rates were increased by the application of the so-called progressive rate. The operation of the progressive rate has been explained elsewhere (see page 25). The progressive rate was applied in the Kansas City, Atlanta, St. Louis, and Dallas districts.

The theory upon which the progressive rate was applied was that inasmuch as the resources of the Federal reserve bank consist wholly of the contributions of the member banks to the deposits and capital of the Federal reserve bank, that all any member bank can be considered as entitled to borrow with due regard to the interests of all other member banks is its proportion of the amount it could borrow if all the banks were borrowing their full proportion at the same time. That is to say, the individual amount to which it is entitled is based upon the member bank's contribution to the resources of the Federal reserve bank. If it borrows more than this amount, it is borrowing at the expense of the other banks, and, therefore, should pay a rate of interest in proportion to the excess which it borrows above the amount which it is entitled to borrow on the foregoing theory; that is, in excess of its basic line.

Digitized by Google

An examination of the statements of a large number of member banks indicates that in some of the Federal reserve districts, and particularly those in which the progressive rate was applied, the resources of the Federal reserve banks were largely absorbed by a relatively small number of banks in each district. This absorption of the resources of the Federal reserve banks reduced the ability of the banks to lend to other member banks. The progressive rate tended to penalize the bank that was borrowing excessively in direct proportion to its excess borrowing, and, therefore, tended to reduce the borrowings of the bank that was borrowing excessively, thus making a larger amount of funds available to banks that were not borrowing at all, or borrowing only moderately.

The time which the commission was able to devote to hearings under the time limitation of the resolution was not sufficient to permit the commission to hear testimony touching the operations of all of the Federal reserve banks. The commission, however, did hear testimony and secured a large amount of statistical data touching the operation of the progressive rate in the Kansas City Federal reserve district.

In general, the complaints against the operation of the progressive rate may be stated as follows:

1. That it resulted in the imposition of exorbitantly high rates of discount on member bank loans.

2. That its application resulted in excessive pressure upon member banks borrowing from the Federal reserve bank to reduce their borrowings.

3. That it resulted in very excessive rates on the borrowings of some banks and consequent hardship.

The operation of the progressive rate in the Kansas City district may be taken as fairly typical of the operation in general. The general theory and application of the progressive rate is described in chapter I on page 25. The discussion which follows relates exclusively to the operation of the progressive rates effective in the tenth (Kansas City) district. Chart C, on page 57, entitled "Absorption of credit, 1920," shows the proportion of the normal lending power of the Kansas City Federal reserve bank absorbed by 14 Kansas City banks, and 9 Omaha banks, paying the progressive rate, and the volume of credit absorbed by banks which were previously not borrowing after the adoption of the progressive rate.

In January, 1920, 14 banks in Kansas City had absorbed 34 per cent of the normal lending power of the Federal reserve bank, and 9 Omaha banks had absorbed 23.5 per cent. Therefore, these two cities alone had absorbed 57 per cent of the normal lending power of the Kansas City Federal Reserve Bank. There was a slight recession in the borrowings of these banks due to temporary seasonal deflation, in the early part of 1920, but by April, 1920, the 14 Kansas City banks were absorbing 50 per cent of the normal lending power of the Kansas City Federal Reserve Bank, and 9 Omaha banks were absorbing 23 per cent, representing a total of 73 per cent of the normal lending power of the Kansas City Federal Reserve Bank, and leaving only 27 per cent of the normal lending power available for the 1,063 other member banks in the Kansas City district.

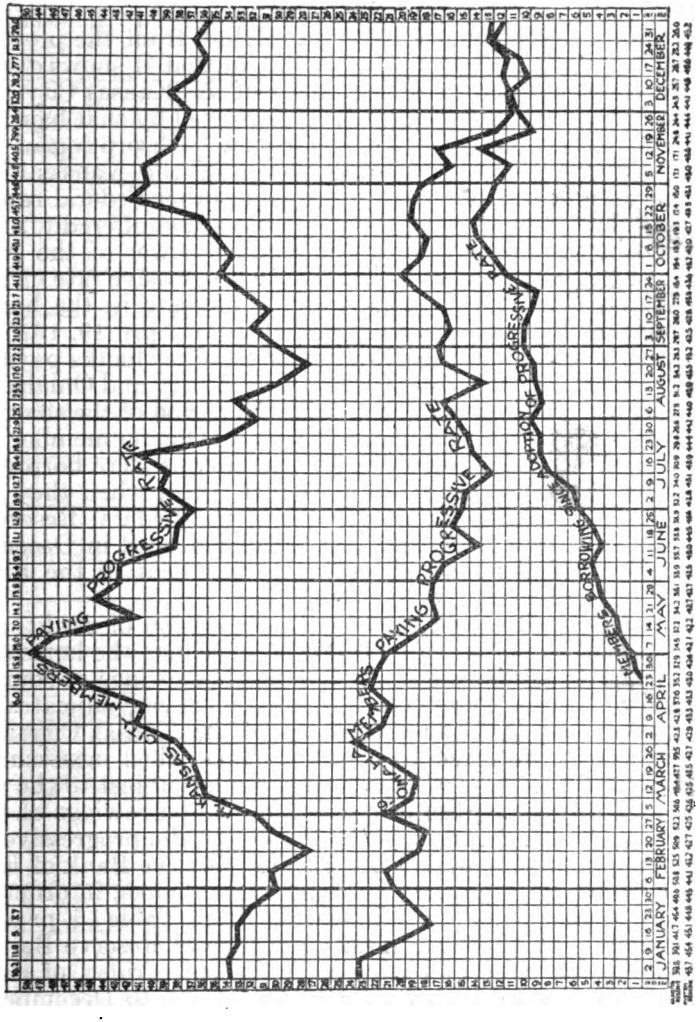
In the period from April 19, 1920, to December 31, 1920, banks which had not been previously borrowing increased their borrowings

Digitized by Google

to 12 per cent of the normal lending power of the Kansas City Federal Reserve Bank. During the same period the number of banks borrowing in the Kansas City Federal reserve district increased from 178, or 16.8 per cent of all the banks, to 416, or 38.3 per cent of all the banks. In the same period, the amount borrowed by all borrowing banks increased from $106,851.047 to $117,328,475. While banks not borrowing previously to April 19, 1920, when the progressive rate

CHART C.

ABSORPTION OF CREDIT 1920



became effective, were increasing their borrowings, the borrowings of the 14 Kansas City member banks paying the progressive rate decreased to 36 per cent of the normal lending power of the Kansas City Federal Reserve Bank, and the borrowings of the 9 Omaha member banks paying the progressive rate decreased to 13 per cent of the normal lending power of the Kansas City Federal Reserve Bank.

Digitized by Google

One effect of the adoption of the progressive rate in the Kansas City Federal reserve district, therefore, apparently was to compel a reduction in the proportion of the lending power of the Kansas City Federal Reserve Bank, which was being absorbed by the large city banks in Kansas City and Omaha, and to permit the use of that lending power in meeting the requirements of banks which were previously not borrowing or borrowing only moderately.

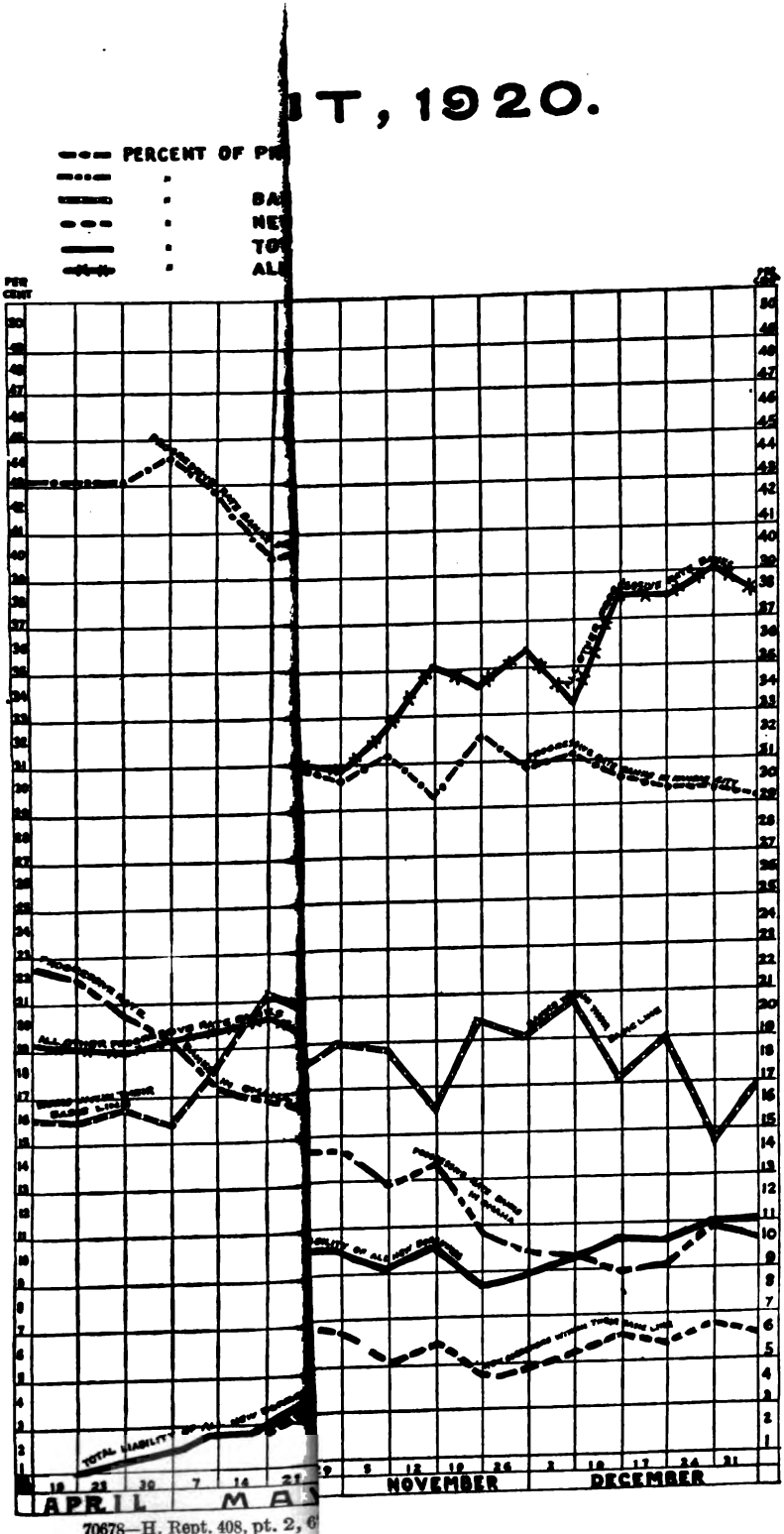
Chart D, facing this page, shows the distribution of credit in the Kansas City Federal reserve district during the period beginning April 19, 1920, to December 31, 1920. It differs from the preceding chart, page 57, showing absorption of credit, in that it shows distribution of credit based upon the lending power of the Kansas City Federal Reserve Bank, including the amounts borrowed by that bank from other Federal reserve banks, while the chart, "Absorption of Credit," is based upon the normal lending power of the Kansas City Federal Reserve Bank without borrowings from other Federal reserve banks.

This chart, like the one showing absorption of credit, indicates the decline in the proportion of the lending power of the Kansas City Federal Reserve Bank absorbed by the progressive rate member banks in Kansas City and Omaha and the increase in the borrowings of member banks not borrowing previously to April 19, 1920. In addition, it shows that the borrowings of all other banks paying the progressive rate, exclusive of those in Kansas City and Omaha, continued to rise until December, 1920, during the period of the sharpest decline in the borrowings of the Kansas City and Omaha member banks. It shows also that the borrowings of banks that were borrowing within their basic line increased until August, 1920, when they reached 31 per cent of the total lending power of the Federal Reserve Bank of Kansas City, and from that point declined until in December, 1920, when these banks were absorbing 17 per cent of the total lending power of the Federal reserve bank.

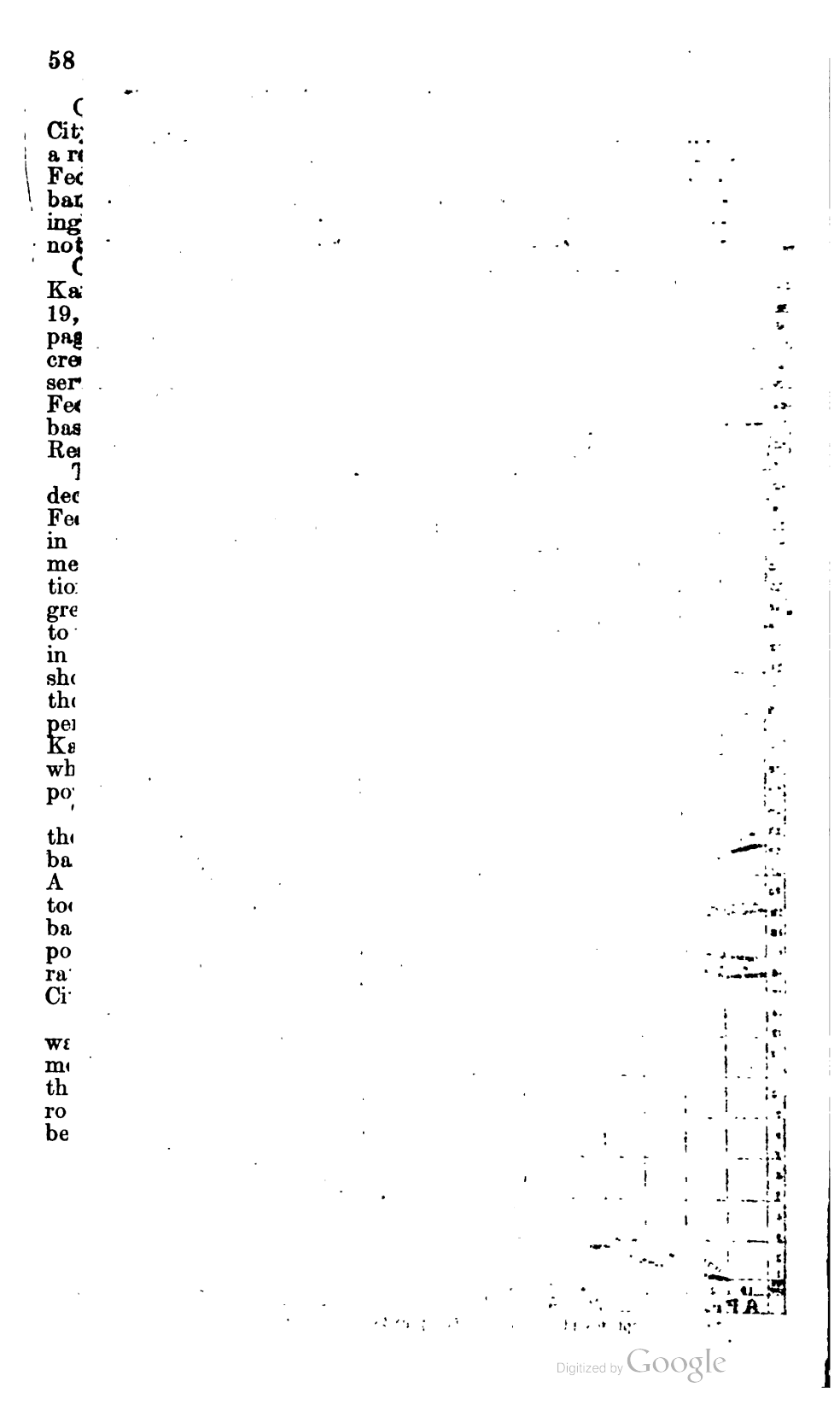
This chart, like the one showing absorption of credit, shows that the effect of the progressive rate was to reduce the borrowing of city banks and to permit an increase in the borrowings of country banks. A study of the accompanying figures, however, indicates that what took place was that the borrowings of the Kansas City and Omaha banks were transferred to country banks, thus increasing the proportion of borrowings of the country banks subject to the progressive rate and decreasing the proportion of the borrowings of the Kansas City and Omaha member banks subject to the progressive rate.

During all of this period the Federal Reserve Bank of Kansas City was borrowing from other Federal reserve banks, in order to accommodate member banks within the district. Table 15, page 59, shows the amounts which the Kansas City Federal Reserve Bank was borrowing at the close of business on the last Friday of each month, beginning with April 30, 1920, and continuing to December 31, 1920.

Digitized by Google



Digitized by Google



Digitized by Google

TABLE 15.—*Rediscount transactions with other Federal reserve banks April 30, 1920, to Dec. 31, 1920.*

Date (last Friday).	Amount rediscounted.	Date (last Friday).	Amount rediscounted.
1920—Apr. 30	$15,871,800.00	1920—Sept. 24	$41,175,220.02
May 28	13,864,500.00	Oct. 29	44,894,420.04
June 25	12,958,000.00	Nov. 26	28,463,142.86
July 30	22,902,386.86	Dec. 31	29,060,531.21
Aug. 27	22,247,117.47		

Table 16, page 60, shows the total charges to member banks under the progressive rate compared with the charges that would have been made if the 7 per cent flat rate effective, for instance, in the Minneapolis district had been applied to the borrowings of member banks in the Kansas City district, and the additional amounts which the Federal Reserve Bank of Kansas City would have been obliged to lend to member banks if all the banks which were not borrowing the amount of their basic line had been borrowing the full amount of their basic line.

Digitized by Google

TABLE 16.—*Comparison of progressive rates versus 7 per cent flat rate.*

[Paper secured by Government issues omitted.]

	Transactions—			Interest cost same volume at 7 per cent.	Difference favoring progressive rate plan.				Liability to extend further credit.				
	At progressive rates.	At normal rates.	Total.		Direct.	Indirect (one-half of 1 per cent on paper secured by United States bonds).		Total.	Excess borrowers.	Normal borrowers.		Nonborrowers.	
						Loans.	Collateral.			Number.	Unused credit.	Number.	Unused credit.
April (12 days):													
Daily average loans	$63,327,210.51	$18,226,494.45	$81,553,704.96										
Monthly interest cost	$130,307.64	$35,953.56	$166,261.20	$187,685.24	$21,424.04	$5,313.32	$32,322,690.71	$26,737.36	171	236	$25,263,230.00	649	$48,898,935.00
Rate per cent	6.25	6.00	6.20										
May:													
Daily average loans	$60,603,969.00	$17,377,276.57	$78,071,245.57										
Monthly interest cost	$338,944.70	$88,552.74	$427,497.44	464,149.60	36,652.16	14,948.40	35,201,077.16	51,600.56	214	270	23,111,283.00	573	48,728,279.00
Rate per cent	6.57	6.00	6.44										
June:													
Daily average loans	$57,057,688.82	$18,968,648.61	$76,026,337.43										
Monthly interest cost	$309,485.70	$93,453.90	$403,029.60	437,411.80	34,382.20	15,371.22	37,403,303.24	49,753.42	251	268	20,652,041.00	536	47,894,870.00
Rate per cent	6.59	6.00	6.44										
July:													
Daily average loans	$60,936,224.44	$18,420,691.64	$79,356,916.08										
Monthly interest cost	$350,570.63	$93,869.86	$444,440.49	471,798.17	27,352.68	16,274.90	38,324,766.62	43,627.58	292	264	22,788,437.00	509	38,548,454.00
Rate per cent	6.77	6.00	6.59										
August:													
Daily average loans	$61,745,580.46	$18,479,322.81	$80,224,903.27										
Monthly interest cost	$350,589.23	$94,168.70	$444,757.93	476,953.54	32,195.61	17,064.44	40,184,001.59	49,260.05	321	241	21,839,402.00	516	39,775,926.00
Rate per cent	6.68	6.00	6.52										
September:													
Daily average loans	$69,336,595.19	$19,017,700.99	$88,354,296.18										
Monthly interest cost	$383,573.10	$93,786.00	$477,359.10	508,339.79	30,980.69	16,310.87	44,099,762.36	47,291.56	346	263	18,740,940.00	471	35,451,518.00
Rate per cent	6.73	6.00	6.57										
October:													
Daily average loans	$83,061,320.43	$18,935,439.07	$101,996,759.50										
Monthly interest cost	$485,085.83	$96,492.77	$581,578.60	606,391.69	24,813.09			24,813.09	391	276	17,631,109.00	415	30,674,461.00
Rate per cent	6.87	6.00	6.71										
November:													
Daily average loans	$88,059,929.37	$16,574,071.10	$104,634,000.47										
Monthly interest cost	$505,679.70	$81,735.30	$587,415.00	602,003.82	14,588.82			14,588.82	389	307	16,808,955.00	390	32,758,389.00
Rate per cent	6.96	6.00	6.83										

Digitized by Google

December:													
Daily average loans	$86,429,676.64	$11,601,949.62	$98,031,626.26						18,232.34	300	324	19,757,375.00	364	31,543,023.00
Monthly interest cost	$505,463.99	$59,121.94	$564,585.93	582,818.29	18,232.34									
Rate per cent	6.88	6.00	6.78											
Entire period (Apr. 19–Dec. 31):														
Daily average loans	$70,554,174.43	$17,450,527.73	$88,004,702.15											
Total interest cost	$3,359,700.52	$737,224.79	$4,096,925.31	4,337,546.94	240,621.63	85,283.15	38,430,062.81	325,904.78						[2] 60,028,563.00
Rate per cent	6.76	6.00	6.61											

[1] 27 days only: 6 per cent rate on Liberty bond paper effective Sept. 28, 1920.

[2] Average unused credit.

Digitized by Google

An examination of this table shows in general that the average rate paid by banks borrowing in excess of their basic line and, therefore, borrowing at the progressive rates, was 6.76 per cent during the period, and the average rate paid by all banks borrowing, both at progressive rates and at normal rates, was 6.61 per cent; and that the total interest paid by all banks during this period in Kansas City was $325,904.78, less than it would have been had the 7 per cent flat rate been in effect in the Kansas City district.

The chart further shows that if all of the banks in the Kansas City Federal reserve district borrowing less than their basic lines, and all the banks not borrowing at all, had borrowed the total amount of their basic lines, the liabilities of the Federal Reserve Bank of Kansas City would have been extended by $60,028,503.

The testimony of the governor of the Federal Reserve Bank of Kansas City, Mr. J. Z. Miller, jr., was to the effect that the total amount of interest in excess of 12 per cent refunded to country banks amounted to less than $300. It was claimed that the discount rates charged member banks during 1920 were reflected in higher interest rates charged to customers by member banks. Testimony before the commission with respect to this claim was that the interest charges of banks paying the progressive rates were identical with the interest rates charged by banks paying normal rates and banks not borrowing at all, and that the interest rates charged by member banks subsequent to the application of the progressive rate were no higher than the rates charged before the adoption of the progressive rate.

Chart E, page 63, shows the average rates of discount effective in the Kansas City district on commercial, agricultural, and industrial paper and on paper secured by Government bonds.

This chart shows that the general rates applicable on the whole to loans in the Kansas City district were relatively less than in those districts in which the 7 per cent rate was applicable.

Whatever may be said touching the effects of the application of the progressive rate on the average, both with respect to its effect in compelling liquidation and in respect to the average rate of interest imposed under it, the fact still remains that its application in many instances at least resulted in the imposition of unconscionable rates of interest upon the borrowings or some portion of the borrowings of the banks borrowing in excess of their basic line.

It also served to exert pressure for liquidation upon those banks and those communities where the needs were the greatest; that is, to penalize the banks making the greatest effort adequately to serve their customers under conditions of peculiar stress and hardship.

The application of a uniform and arbitrary rule to all banks regardless of the hardships or loss which might be imposed by its application upon banks, communities, or individuals in a time of great unavoidable hardship, loss, and suffering, and without regard to the peculiar circumstances existing in the specific cases, can not be justified from the standpoint of sound banking. Nor can it be justified from the standpoint of the consideration which the public is entitled to expect from agencies which, however private in management and control, are nevertheless exercising public functions of the greatest influence and power upon the economic life of the people.

Digitized by Google

Sound banking requires the exercise of a sympathetic and understanding discretion in the making of loans, considering all of the circumstances existing in the case, and the infirmity of the progressive rate is in its substitution of a fixed, uniform, and arbitrary rule for the exercise of understanding and sympathetic discretion in making loans.

CHART E.

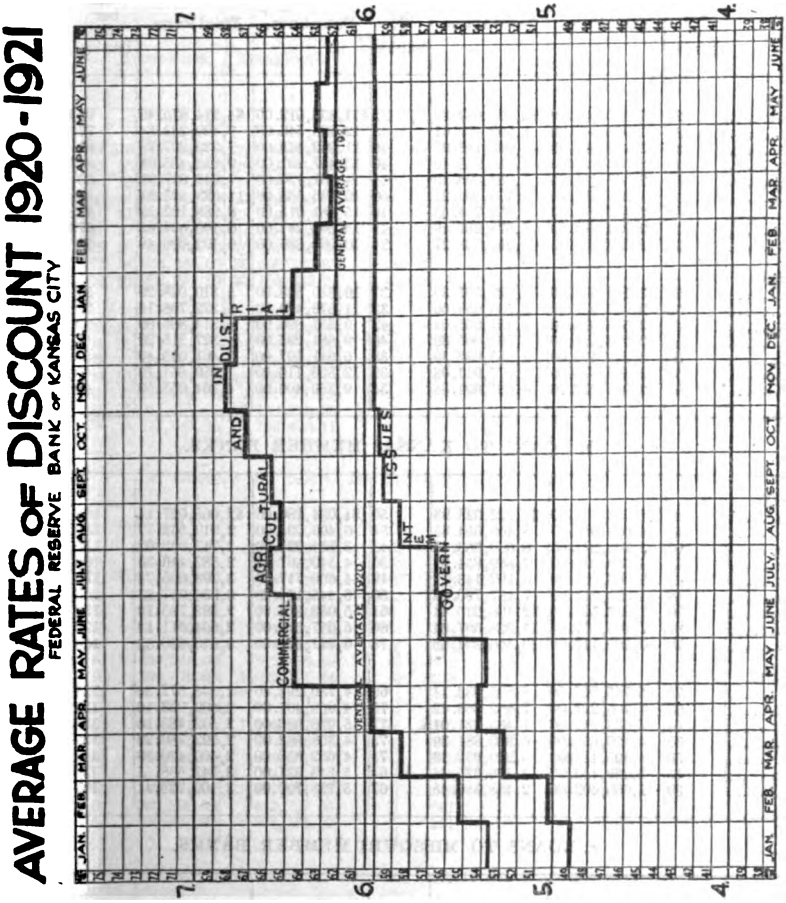

AVERAGE RATES OF DISCOUNT 1920-1921
FEDERAL RESERVE BANK OF KANSAS CITY
COMMERCIAL
AGRICULTURAL AND INDUSTRIAL
GOVERNMENT INTEREST ISSUES
JANUARY AVERAGE 1921
JANUARY AVERAGE 1920
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE

Table 17, page 64, shows the loans and discounts of banks borrowing in excess of their basic lines, banks borrowing less than their basic lines, and nonborrowing banks, separately, together with the total loans of each class of borrowers on the 30th of each month, by States included in the tenth district.

Digitized by Google

TABLE 17.—*Federal Reserve Bank of Kansas City—Loans to member banks, classified by States—Basis, 30th of each month—April, 1920, to July, 1921.*

a. LOANS TO COLORADO MEMBER BANKS.

Date.	Excessive borrowers.			Nonexcessive borrowers.			Nonborrowers.	
	Number of banks.	Basic lines.	Total loans.	Number of banks.	Basic lines.	Total loans.	Number of banks.	Basic lines.
1920.								
Apr.	26	$2,190,658.00	$2,674,642.82	22	$11,438,612.00	$4,214,875.49	93	$12,447,808.00
May.	21	1,033,948.00	1,600,429.61	45	12,225,546.00	7,400,243.84	77	12,367,584.00
June.	33	2,289,020.00	4,662,143.97	46	11,962,433.00	7,339,207.78	64	11,608,071.00
July.	39	2,566,275.00	5,210,933.49	40	13,447,701.00	9,616,485.91	66	9,421,911.00
Aug.	42	2,637,481.00	5,353,396.10	44	14,361,196.00	7,942,917.31	60	8,011,975.00
Sept.	37	1,922,215.00	4,173,594.21	50	16,136,533.00	11,523,493.91	59	6,431,438.00
Oct.	42	2,442,097.00	5,013,744.55	46	15,881,015.00	8,988,162.52	58	7,044,596.00
Nov.	36	2,231,382.00	3,874,287.49	43	15,365,241.00	6,160,664.65	67	7,601,302.00
Dec.	50	3,027,160.00	5,951,738.27	34	10,060,889.00	6,102,696.48	62	9,115,733.00
1921.								
Jan.	53	3,140,368.00	6,022,507.35	37	10,310,308.00	5,819,048.29	56	10,772,412.00
Feb.	55	2,946,937.00	5,836,659.60	32	11,676,470.00	5,372,708.14	58	8,951,017.00
Mar.	45	2,575,805.00	4,457,061.04	42	9,351,896.00	4,314,896.00	58	11,409,632.00
Apr.	46	2,295,421.00	3,765,966.39	46	9,681,295.00	4,327,315.20	53	10,566,360.00
May.	50	2,219,400.00	3,553,932.30	38	6,641,507.00	3,461,015.49	57	13,162,031.00
June.	58	2,467,799.00	3,977,911.03	39	12,859,116.00	7,059,651.79	49	6,124,487.00
July.	62	2,910,222.00	4,687,691.88	35	9,359,400.00	4,364,055.59	49	8,936,744.00

b. LOANS TO KANSAS MEMBER BANKS.

1920.								
Apr.	42	$4,086,705.00	$7,222,023.93	50	$4,034,280.00	$2,068,027.14	164	$14,143,020.00
May.	49	4,694,066.00	8,469,654.85	54	6,406,095.00	2,919,562.77	153	10,843,688.00
June.	60	5,200,277.00	8,600,683.41	48	3,554,221.00	1,747,032.02	155	13,064,913.00
July.	51	4,586,295.00	7,889,854.37	50	4,140,661.00	2,582,416.30	160	13,611,768.00
Aug.	44	3,363,102.00	5,192,143.77	49	4,699,717.00	3,793,005.73	170	14,289,923.00
Sept.	48	4,323,214.00	7,137,790.88	56	6,445,154.00	3,936,907.63	163	11,790,804.00
Oct.	70	7,216,520.00	12,196,210.44	61	5,053,384.00	2,393,785.70	137	9,267,068.00
Nov.	82	7,405,367.00	13,228,607.64	66	5,317,572.00	2,654,011.13	122	7,528,180.00
Dec.	79	6,209,117.00	10,566,351.55	78	6,711,374.00	3,810,630.33	114	7,354,454.00
1921.								
Jan.	73	5,746,067.00	8,895,933.14	69	4,730,293.00	2,545,577.30	131	10,338,967.00
Feb.	63	4,706,211.00	7,662,866.42	75	4,959,407.00	2,609,923.16	134	10,585,565.00
Mar.	64	4,623,211.00	7,435,131.01	72	5,996,996.00	2,592,483.56	138	9,242,125.00
Apr.	62	4,476,650.00	6,840,884.39	75	4,308,853.00	2,522,780.29	137	10,312,741.00
May.	59	4,105,415.00	5,919,932.13	75	4,652,856.00	2,469,420.89	141	10,103,466.00
June.	55	2,069,153.00	3,196,625.44	64	5,543,931.00	3,141,568.53	156	11,453,696.00
July.	39	1,665,602.00	2,488,386.45	67	5,728,790.00	3,109,728.41	169	12,321,268.00

c. LOANS TO MISSOURI MEMBER BANKS.

1920.								
Apr.	18	$24,684,942.00	$59,828,579.94	15	$2,944,519.00	$2,116,252.62	28	$2,713,709.00
May.	21	24,186,710.00	52,338,072.91	15	3,816,834.00	2,611,124.21	25	2,435,427.00
June.	22	22,098,411.00	44,228,703.65	14	6,876,517.00	4,074,942.52	24	2,265,463.00
July.	23	22,486,941.00	47,896,403.23	16	7,806,754.00	5,221,590.13	21	1,474,511.00
Aug.	21	21,632,252.00	42,899,903.92	16	8,943,688.00	3,466,375.69	23	1,933,637.00
Sept.	26	20,627,310.00	49,817,764.28	12	7,594,771.00	5,024,723.22	22	1,982,336.00
Oct.	29	24,787,649.00	57,207,029.72	12	2,462,062.00	1,663,294.72	18	1,359,803.00
Nov.	30	27,803,294.00	52,116,388.09	13	2,520,334.00	1,709,228.53	16	1,454,402.00
Dec.	25	21,941,286.00	47,847,713.17	17	7,462,838.00	2,990,860.72	16	1,543,533.00
1921.								
Jan.	15	10,607,636.00	23,227,319.77	25	14,874,674.00	10,796,659.20	18	7,732,000.00
Feb.	16	10,699,709.00	20,861,079.64	24	14,247,935.00	10,009,611.94	18	7,915,548.00
Mar.	21	19,203,836.00	30,692,598.93	18	5,703,345.00	3,059,482.31	19	6,864,776.00
Apr.	20	18,454,579.00	28,851,067.66	18	5,706,814.00	3,460,294.66	19	6,773,039.00
May.	20	9,440,655.00	14,637,852.58	18	18,766,384.00	11,608,845.26	19	2,489,659.00
June.	18	8,277,734.00	11,930,087.19	20	14,697,657.00	11,965,099.33	18	6,657,357.00
July.	15	13,881,453.00	17,986,757.72	22	8,463,883.00	5,995,084.64	19	6,646,131.00

Digitized by Google

TABLE 17.—*Federal Reserve Bank of Kansas City—Loans to member banks, classified by States—Basis, 30th of each month—April, 1920, to July, 1921*—Continued.

d. LOANS TO NEBRASKA MEMBER BANKS.

Date.	Excessive borrowers.			Nonexcessive borrowers.			Nonborrowers.	
	Number of banks.	Basic lines.	Total loans.	Number of banks.	Basic lines.	Total loans.	Number of banks.	Basic lines.
1920.								
Apr.	64	$19,938,192.00	$38,149,239.68	62	$5,129,982.00	$2,885,887.05	81	$5,262,530.00
May	67	16,748,403.00	29,125,564.31	69	5,044,171.00	3,056,947.80	71	4,140,848.00
June	68	13,273,418.00	24,828,240.93	67	8,176,110.00	5,240,751.18	72	4,118,044.00
July	80	14,096,013.00	27,184,183.94	53	6,018,215.00	3,773,073.17	74	4,175,497.00
Aug	91	14,966,386.00	28,369,933.58	44	5,298,215.00	4,024,832.18	71	4,316,568.00
Sept	101	17,643,636.00	34,588,091.04	52	3,214,215.00	1,483,506.96	52	2,968,153.00
Oct	115	16,628,100.00	36,457,048.98	53	3,085,045.00	1,837,127.07	40	2,139,098.00
Nov	122	14,864,385.00	30,000,120.03	58	5,314,197.00	3,112,827.83	30	1,618,186.00
Dec	130	16,962,341.00	30,195,332.24	46	2,989,796.00	1,902,333.67	34	1,848,575.00
1921.								
Jan.	120	11,921,726.00	19,934,532.09	49	3,946,928.00	2,464,866.36	41	6,491,847.00
Feb.	108	11,914,884.00	18,710,516.03	56	3,672,117.00	2,018,626.96	46	6,889,313.00
Mar.	99	10,393,940.00	17,779,861.31	58	6,393,688.00	3,709,447.93	51	5,671,784.00
Apr.	100	10,596,752.00	16,890,984.48	61	5,818,023.00	3,515,997.89	48	5,025,541.00
May	92	6,248,302.00	9,507,970.81	61	9,080,736.00	6,008,899.87	56	5,877,471.00
June	89	3,961,801.00	6,199,120.20	57	9,658,836.00	7,081,470.22	63	7,884,622.00
July	78	5,613,047.00	7,753,416.11	64	7,986,294.00	4,397,328.38	67	8,461,733.00

e. LOANS TO NEW MEXICO MEMBER BANKS.

1920.								
Apr.	1	$210,040.00	$352,730.00	3	$242,092.00	$120,720.00	9	$721,027.00
May	2	216,938.00	418,687.16	3	152,413.00	74,829.00	8	698,328.00
June	4	346,550.00	648,743.31	3	173,287.00	94,121.90	6	563,946.00
July	3	298,105.00	629,889.27	5	413,042.00	238,582.71	5	386,014.00
Aug	5	411,712.00	715,760.10	4	318,292.00	156,679.09	4	373,639.00
Sept	6	411,453.00	704,524.60	3	266,544.00	115,605.00	4	355,121.00
Oct	6	461,234.00	776,785.36	3	224,888.00	137,308.66	4	318,846.00
Nov	6	450,214.00	812,436.88	4	272,794.00	75,416.71	3	319,279.00
Dec	6	556,570.00	1,022,121.44	6	358,979.00	182,091.55	1	30,680.00
1921.								
Jan.	8	616,548.00	1,066,857.52	4	277,631.00	234,081.05	2	42,575.00
Feb.	8	625,895.00	999,328.04	4	279,549.00	193,756.78	2	48,022.00
Mar.	8	555,610.00	844,677.30	4	363,415.00	177,512.50	2	43,767.00
Apr.	7	421,830.00	553,521.76	5	439,522.00	283,819.09	2	43,100.00
May	6	347,516.00	467,251.19	7	543,441.00	393,256.95	2	43,927.00
June	6	320,396.00	442,722.06	7	661,138.00	454,502.39	2	40,307.00
July	8	535,531.00	724,552.52	4	291,944.00	84,727.99	3	132,934.00

f. LOANS TO OKLAHOMA MEMBER BANKS.

1920.								
Apr.	22	$2,117,095.00	$2,973,382.17	66	$19,126,766.00	$7,735,842.35	251	$17,339,168.00
May	36	4,133,829.00	6,234,776.11	79	18,166,090.00	9,367,522.83	214	15,004,410.00
June	55	4,086,789.00	6,105,553.62	84	18,780,744.00	10,759,185.93	190	14,346,333.00
July	78	5,493,537.00	7,373,169.91	88	18,725,784.00	11,781,486.93	179	12,429,095.00
Aug	85	8,883,065.00	14,251,072.33	88	14,830,035.00	9,602,072.19	165	11,189,448.00
Sept	101	8,979,804.00	18,443,309.55	88	15,146,696.00	9,104,227.46	150	9,620,328.00
Oct	107	11,280,773.00	17,771,553.90	98	13,492,323.00	9,942,015.35	134	8,464,968.00
Nov	103	12,753,100.00	18,934,583.60	110	12,105,251.00	8,035,999.62	128	7,750,183.00
Dec	110	13,706,679.00	19,321,997.73	109	10,813,298.00	6,093,883.43	121	7,739,190.00
1921.								
Jan.	105	10,470,842.00	15,347,196.09	118	13,924,818.00	8,297,760.39	116	8,036,268.00
Feb.	103	6,089,531.00	10,098,527.80	113	17,544,748.00	10,165,274.59	122	8,226,050.00
Mar.	107	5,853,560.00	9,263,278.26	108	17,411,435.00	11,516,220.04	124	7,803,117.00
Apr.	106	6,269,023.00	9,163,998.42	122	16,484,489.00	11,085,056.81	110	6,973,922.00
May	110	6,884,655.00	9,527,284.58	124	15,572,044.00	9,993,896.44	104	6,669,912.00
June	116	8,035,283.00	10,696,641.24	106	13,145,419.00	7,995,589.93	116	7,202,364.00
July	104	7,036,710.00	9,839,676.98	114	12,933,562.00	8,240,141.84	119	1,269,994.00

Digitized by Google

TABLE 17.—*Federal Reserve Bank of Kansas City—Loans to member banks, classified by States—Basis, 30th of each month—April, 1920, to July, 1921*—Continued.

g. LOANS TO WYOMING MEMBER BANKS.

Date.	Excessive borrowers.			Nonexcessive borrowers.			Nonborrowers.	
	Number of banks.	Basic lines.	Total loans.	Number of banks.	Basic lines.	Total loans.	Number of banks.	Basic lines.
1920.								
Apr	5	$557,682.00	$650,448.90	11	$1,084,308.00	$503,182.97	30	$3,746,879.00
May	6	617,942.00	1,114,503.55	16	2,073,403.00	861,151.46	24	2,567,443.00
June	11	1,034,263.00	2,067,738.09	14	2,061,885.00	954,752.65	23	2,109,974.00
July	14	954,258.00	2,158,947.91	15	2,664,456.00	1,580,455.94	20	1,692,542.00
Aug	18	1,991,160.00	3,537,959.27	11	1,650,078.00	945,269.13	20	1,605,111.00
Sept	19	2,078,566.00	3,488,031.11	10	1,189,779.00	582,135.08	21	1,899,605.00
Oct	18	1,953,242.00	3,140,836.06	9	1,038,494.00	556,576.17	23	2,133,818.00
Nov	13	866,900.00	1,510,877.64	12	1,678,051.00	1,131,505.86	25	2,533,254.00
Dec	16	1,833,422.00	2,423,221.17	14	1,700,931.00	858,411.50	20	1,964,731.00
1921.								
Jan	11	1,035,969.00	1,485,153.40	23	3,132,339.00	1,965,547.11	17	1,561,958.00
Feb	13	1,762,984.00	2,338,387.26	22	2,407,844.00	1,358,814.25	16	1,566,661.00
Mar	17	1,826,527.00	2,729,030.95	17	1,737,275.00	1,135,035.37	17	1,710,416.00
Apr	19	2,512,160.00	3,804,032.64	17	1,248,422.00	692,811.46	15	1,446,684.00
May	17	2,307,890.00	3,574,753.99	19	1,190,782.00	744,862.78	15	1,516,685.00
June	21	2,286,552.00	3,794,631.60	14	950,095.00	666,392.73	16	1,616,989.00
July	21	2,172,814.00	3,955,107.52	18	1,296,951.00	806,189.95	12	1,269,994.00

Table 18, below, is a recapitulation of the figures in the preceding tables, and in addition the per cent of the total which the basic lines and the amounts borrowed by each class of borrowers bears to the total basic line or to the total borrowings from the Kansas City Federal Reserve Bank:

TABLE 18—*Recapitulation, tenth district.*

Months.	Excessive borrowers.					
	Banks.		Basic line.		Borrowed.	
	Number.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
1920.						
April	178	16.8	$53,785,314.00	34.9	$106,851,047.36	84.5
May	202	19.1	51,631,836.00	35	99,301,688.50	79
June	253	23.9	48,328,728.00	.....	91,141,806.98	75.1
July	280	26.1	50,481,424.00	34.4	98,345,382.12	73.9
August	306	28.5	53,885,158.00	36.9	100,320,169.07	77
September	338	31.3	55,986,198.00	39.7	118,353,105.68	78.8
October	387	35.7	64,769,615.00	47.4	132,563,208.93	83.9
November	392	36	66,374,642.00	48.2	120,477,301.37	84
December	416	38.3	64,236,575.00	47.9	117,328,475.57	84.2
1921.						
January	385	35.3	43,539,156.00	31.2	75,979,499.36	70.3
February	366	33.6	38,746,151.00	28.1	66,507,364.79	67.7
March	361	33.2	45,032,489.00	33.4	73,201,638.80	73.2
April	360	33.1	45,026,415.00	34.7	69,870,455.74	72.9
May	354	32.5	31,553,833.00	24.6	47,188,977.58	57.6
June	363	33.3	27,418,718.00	21.8	40,237,738.76	51.2
July	327	30	33,815,379.00	27.1	47,435,589.18	63.7

Digitized by Google

TABLE 18—*Recapitulation, tenth district*—Continued.

Months.	Nonexcessive borrowers.					
	Banks.		Basic line.		Borrowed.	
	Number.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
1920.						
April	229	21.5	$44,000,559.00	28.5	$19,644,738.12	15.5
May	281	26.6	47,884,552.00	32.5	26,291,382.41	21
June	271	25.6	51,585,197.00	34.9	30,209,993.98	24.9
July	267	24.9	53,216,613.00	36.2	34,794,091.09	26.1
August	256	23.8	50,101,221.00	34.4	29,931,151.32	23
September	271	25.1	49,993,692.00	35.4	31,770,599.26	21.2
October	282	26	41,240,211.00	30.2	25,518,270.19	16.1
November	306	28.1	42,573,440.00	30.9	22,879,654.33	16
December	304	27.9	40,098,105.00	29.9	21,940,907.68	15.8
1921.						
January	325	29.8	51,196,991.00	36.6	32,123,539.70	29.7
February	326	30	54,788,070.00	39.8	31,718,715.82	32.3
March	319	29.3	46,958,050.00	34.9	26,864,200.30	26.8
April	344	31.6	43,687,418.00	33.6	25,888,075.40	27.1
May	342	31.4	56,847,750.00	44.3	34,680,197.68	42.4
June	307	28.1	57,516,192.00	45.7	38,364,274.92	48.8
July	324	29.8	46,060,824.00	36.9	26,997,256.80	36.3

Months.	Nonborrowing.				Total.		
	Banks.		Basic line.		Number of banks.	Basic line.	Liability.
	Number.	Per cent.	Amount.	Per cent.			
1920.							
April	656	61.7	$56,374,141.00	36.6	1,063	$154,160,014.00	$126,495,785.48
May	572	54.3	48,057,728.00	32.5	1,055	147,574,116.00	125,593,070.91
June	534	50.5	48,076,744.00	32.4	1,058	147,990,669.00	121,351,800.96
July	525	49	43,191,338.00	29.4	1,072	146,889,375.00	131,137,473.21
August	513	47.7	41,719,701.00	28.7	1,075	145,706,080.00	130,051,320.39
September	471	43.6	35,047,785.00	24.9	1,080	141,027,675.00	150,123,704.94
October	414	38.3	30,728,197.00	22.4	1,083	136,738,023.00	158,081,479.12
November	391	35.9	28,804,794.00	20.9	1,089	137,752,876.00	143,356,955.70
December	368	33.8	29,596,896.00	22.2	1,088	133,931,576.00	139,269,383.25
1921.							
January	381	34.9	44,976,027.00	32.2	1,091	139,712,174.00	108,103,039.06
February	396	36.4	44,182,176.00	32.1	1,088	137,716,397.00	98,226,080.61
March	409	37.5	42,745,617.00	31.7	1,089	134,736,156.00	100,065,839.10
April	384	35.3	41,141,387.00	31.7	1,088	129,855,220.00	95,758,531.14
May	394	36.1	39,863,151.00	31.1	1,090	128,264,734.00	81,869,175.26
June	420	38.6	40,979,822.00	32.5	1,090	125,914,732.00	78,602,013.68
July	438	40.2	44,900,328.00	36	1,089	124,776,531.00	74,432,845.98

Deflation appears to have been greater in extent and more rapid in the Kansas City district than in other agricultural districts where conditions are fairly comparable.

Tables 19, page 69, and 20, page 70, show the course of deflation from June 30, 1920, to June 30, 1921, as indicated by borrowings at the Federal Reserve Banks of Richmond (incomplete), Atlanta (incomplete), Chicago, Minneapolis, Kansas City, and Dallas.

For this purpose, as well as for the purpose of determining the relative degree of deflation of loans and discounts in country banks as compared with city banks, loans and discounts of Federal Reserve banks have been divided into three classes, all banks including both country and city banks, city banks, and country banks. The cities in which the borrowings of city member banks are separated from the total borrowings of all member banks, in order to make the divisions

Digitized by Google

indicated in Table 19, are given in the supporting data in Table 20, *a*, *b*, *c*, *d*, *e*, and *f*. The reduction in the borrowings of all member banks in these districts from June 30, 1920, to June 30, 1921, was 26 per cent, as compared with 30 per cent in the Chicago district, 35 per cent in the Minneapolis district, 35 per cent in the Kansas City district, and 12 per cent in the Dallas district. The incomplete figures for the Richmond and Atlanta districts show an increase in the borrowings of all banks of 24 per cent and 26 per cent, respectively.

The decrease in borrowings of all city banks in all the districts included amounted to 44 per cent, as against a decrease of 43 per cent in the Chicago district, 43 per cent in the Minneapolis district, 47 per cent in the Kansas City district, and 24 per cent in the Dallas district, 14 per cent in the portion of the Atlanta district included, and an increase of 14 per cent in the portion of the Richmond district included.

In the case of country banks there was an increase in the borrowings of the Federal reserve banks in all of the districts included in the table with the exception of Kansas City. The increase in the borrowings of all country banks during this period amounted to 33 per cent, as compared with an increase in the Chicago district of 83 per cent, in the Minneapolis district of 29 per cent, in the Dallas district of 15 per cent, in the Atlanta (incomplete) district of 44 per cent, in the Richmond (incomplete) district of 27 per cent, and a decrease in the Kansas City district of 4 per cent.

The progressive rate was in effect in the Atlanta, St. Louis, Kansas City, and Dallas districts. It was not in effect in the Minneapolis and Chicago districts. An examination of this table and of the supporting data seems to justify the conclusions—

1. That the amount and rate of deflation was not controlled by the application of the progressive rate. The rate of deflation was 35 per cent in the tenth district, which had the progressive rate, and 35 per cent in the Minneapolis district, which did not have the progressive rate. There was a decrease of 30 per cent in the borrowings of all banks in the Chicago district, which did not have the progressive rate, as against a decrease of 12 per cent in the Dallas district, and an increase of 26 per cent in the Atlanta district (incomplete), in both of which the progressive rate was effective.

2. The tables support the conclusion that the reduction in loans and discounts in country banks was relatively less than in city banks.

Digitized by Google

TABLE 19.—*Statement showing per cent of increase or decrease of basic line and amount borrowed as of June 30, 1920, against June 30, 1921.*

	All banks.			City banks.			Country banks.		
	1920	1921	Per cent of increase(+) or decrease(−).	1920	1921	Per cent of increase(+) or decrease(−).	1920	1921	Per cent of increase(+) or decrease(−).
Fifth district (Richmond):									
Amount borrowed	$33,269,000.00	$41,429,000.00	+24	$6,131,000.00	$6,965,000.00	+14	$27,138,000.00	$34,464,000.00	+27
Sixth district (Atlanta):									
Basic line	17,934,766.00	14,809,989.00	−17	10,864,886.00	9,350,676.00	−14	6,224,437.00	4,842,270.00	−23
Amount borrowed	10,164,433.00	12,792,963.00	+26	3,033,975.00	2,602,463.00	−14	7,130,458.00	10,290,500.00	+44
Seventh district (Chicago):									
Basic line	392,401,866.00	327,033,147.00	−17	324,765,410.00	268,240,972.00	−18	67,636,456.00	58,792,175.00	−13
Amount borrowed	444,344,219.00	310,741,653.00	−30	396,999,011.00	226,052,469.00	−43	47,345,208.00	86,689,184.00	+83
Ninth district (Minneapolis):									
Amount borrowed	72,366,268.36	46,874,190.53	−35	65,016,591.66	37,230,788.55	−43	7,349,676.70	9,463,401.98	+29
Tenth district (Kansas City):									
Basic line	99,523,347.00	87,123,301.00	−13	66,935,320.00	54,605,696.00	−18	32,588,027.00	32,517,605.00	−2/10
Amount borrowed	121,368,887.93	78,601,804.61	−35	88,195,198.15	46,873,773.71	−47	33,173,689.78	31,728,028.90	− 4
Eleventh district (Dallas):									
Basic line	65,930,623.21	53,891,406.04	−18	24,942,519.00	16,702,873.00	−33	39,348,280.65	36,454,417.74	− 7
Amount borrowed	82,584,943.15	72,618,451.32	−12	29,012,240.00	11,303,446.00	−24	53,572,713.15	61,315,005.32	+15
Total:									
Basic line	575,790,602.21	549,433,139.04	− 5	427,508,135.00	390,425,380.00	− 9	145,797,200.00	156,877,977.74	+ 8
Amount borrowed	764,097,750.44	563,058,062.46	−26	588,385,015.81	331,027,940.26	−44	175,709,945.63	234,130,120.20	+33

Digitized by Google

TABLE 20.—*Recapitulation by districts.*

	1920				1921			
	Gross total.	Eliminations.	Nonborrowing.	Net total.	Gross total.	Eliminations.	Nonborrowing.	Net total.
Fifth district:[1]								
Basic line					$17,580,000.00	$2,284,000.00		$15,296,000.00
Amount borrowed	$33,269,000.00	$6,131,000.00		$27,138,000.00	41,429,000.00	6,965,000.00		34,464,000.00
Sixth district:[2]								
Capital and surplus	23,122,200.00	9,723,300.00		13,398,900.00	25,508,100.00	9,880,000.00		15,628,100.00
Basic line	17,934,766.00	10,864,886.00	$845,433.00	6,224,437.00	14,809,989.00	9,350,676.00	$617,043.00	4,842,270.00
Amount borrowed	10,164,433.00	3,030,975.00		7,130,458.00	12,792,963.00	2,602,463.00		10,290,500.00
Seventh district:								
Capital and surplus	330,546,350.00	252,429,600.00		78,116,750.00	336,647,600.00	287,756,200.00		78,891,400.00
Reserve balance	231,630,037.00	191,064,792.00		40,565,245.00	200,347,335.00	105,719,095.00		34,628,240.00
Basic line	392,401,866.00	324,765,410.00		67,636,456.00	327,033,147.00	268,240,972.00		58,792,175.00
Amount borrowed	444,344,219.00	396,999,011.00		47,345,208.00	310,741,653.00	226,052,469.00		86,689,184.00
Ninth district:								
Capital and surplus					42,039,982.00	22,050,000.00		19,989,982.00
Reserve balance					20,733,186.00	14,972,197.00		5,760,989.00
Basic line					48,995,296.00	38,510,144.00	1,509,642.00	8,975,510.00
Amount borrowed	72,366,268.36	65,016,591.66		7,349,676.70	46,874,190.53	37,230,788.55		9,643,401.98
Tenth district:								
Capital and surplus	94,874,600.00	54,882,500.00		39,992,100.00	102,647,857.00	44,738,500.00		50,295,357.00
Reserve balance	56,179,297.00	38,656,675.00		17,522,622.00	46,683,440.00	29,429,542.00		18,253,898.00
Basic line	99,523,347.00	66,935,320.00		32,588,027.00	87,123,301.00	54,605,696.00		32,517,605.00
Amount borrowed	121,368,887.93	88,195,198.15		33,173,689.78	78,601,804.61	46,873,773.71		31,728,028.90
Eleventh district:								
Capital and surplus	88,016,939.00	22,190,000.00		65,826,939.00	106,653,826.00	26,180,000.00		80,473,826.00
Reserve balance	33,934,012.84	11,334,608.00		22,599,404.84	31,394,174.75	12,168,289.00		19,225,885.75
Basic line	65,930,623.21	21,912,519.00	-1,639,823.56	39,348,280.00	53,891,406.04	16,702,873.00	734,115.30	36,454,417.74
Amount borrowed	82,584,942.15	29,012,240.00		53,572,713.15	72,618,451.32	11,303,446.00		61,315,005.32
Total:								
Capital and surplus	536,560,089.00	339,225,400.00		197,334,089.00	613,497,365.00	390,604,700.00		245,278,665.00
Reserve balance	321,743,346.84	241,056,075.00		80,687,271.81	299,158,135.75	162,289,123.00		77,869,012.75
Basic line	575,790,602.21	427,508,135.00	2,485,266.56	145,797,200.00	549,433,139.04	390,425,389.00	2,860,800.30	156,877,977.74
Amount borrowed	764,097,750.44	588,385,015.81		175,709,945.63	563,058,062.46	331,027,940.26		234,130,120.20

[1] Fifth district does not include Richmond and West Virginia.
[2] Sixth district includes Alabama only.

NOTE.—These figures are taken as of June 30, 1920, and as of June 30, 1921.

Digitized by Google

TABLE 20*a*.—*Fifth district.*

	Gross.	Eliminations.	Net total.
Basic line	$17,580,000	$2,284,000	$13,296,000
Amount borrowed:			
June 30, 1921	41,429,000	6,965,000	34,464,000
June 30, 1920	33,269,000	6,131,000	27,138,000

NOTE.—Fifth district does not include statement for Richmond and West Virginia.

ELIMINATIONS.

	Charleston, S. C.	Raleigh, N. C.	Total.
Basic line	$1,512,000	$772,000	$2,284,000
Amount borrowed:			
June 30, 1921	4,610,000	2,355,000	6,965,000
June 30, 1920	4,256,000	1,875,000	6,131,000

TABLE 20*b*.—*Sixth district.*

Alabama.	Gross.	Eliminations.	Nonborrowing.	Net total.
1920.				
Capital and surplus	$23,122,200	$9,723,300	.....	$13,398,900
Basic line	17,934,766	10,864,886	$845,443	6,224,437
Amount borrowed	10,164,433	3,033,975	.....	7,130,458
1921.				
Capital and surplus	25,508,100	9,880,000	.....	15,628,100
Basic line	14,809,989	9,350,676	617,043	4,842,270
Amount borrowed	12,792,963	2,602,463	.....	10,290,500

ELIMINATIONS.

Alabama.	Montgomery.	Mobile.	Birmingham.	Total.
1920.				
Capital and surplus	$2,463,300	$2,060,000	$4,900,000	$9,423,300
Basic line	1,493,428	2,764,346	6,607,112	10,864,886
Amount borrowed	1,214,277	464,000	1,355,698	3,033,975
1921.				
Capital and surplus	2,480,000	2,150,000	5,250,000	9,880,000
Basic line	1,213,636	2,221,263	5,915,777	9,350,676
Amount borrowed	1,508,410	869,053	225,000	2,602,463

NOTE.—Sixth district includes Alabama only.

Digitized by Google

TABLE 20c.—*Seventh district.*

	1920			1921		
	Gross.	Eliminations.	Net total.	Gross.	Eliminations.	Net total.
ILLINOIS.						
Amount borrowed	$254,934,401	$246,134,401	$8,800,000	$125,468,759	$115,322,508	$10,146,251
Capital and surplus	169,450,500	144,478,100	24,972,400	197,493,200	176,438,500	21,054,700
Basic line	227,351,580	214,971,371	12,380,209	190,580,743	179,359,307	11,221,436
Reserve balance	138,513,861	130,440,278	8,073,583	122,767,509	115,806,808	6,960,701
INDIANA.						
Amount borrowed	26,638,177	17,845,253	8,792,924	21,684,171	13,627,921	8,056,250
Capital and surplus	27,784,100	10,965,000	16,819,100	28,789,400	11,280,000	17,509,400
Basic line	25,895,382	11,179,492	14,715,890	17,309,694	9,153,096	8,156,598
Reserve balance	13,679,859	7,499,234	6,180,625	10,323,229	5,080,014	5,243,215
WISCONSIN.						
Amount borrowed	42,973,328	36,504,165	6,469,163	38,849,823	29,685,371	11,164,452
Capital and surplus	30,231,800	17,171,000	13,060,800	31,002,000	16,928,000	14,074,000
Basic line	26,446,502	19,686,060	6,760,442	22,729,906	15,169,042	7,560,864
Reserve balance	15,238,928	10,342,242	4,896,686	12,910,838	8,495,208	4,415,630
IOWA.						
Amount borrowed	47,790,072	30,658,493	17,131,579	64,734,833	19,626,893	45,107,940
Capital and surplus	17,303,900	14,224,500	3,079,400	18,320,800	13,873,700	4,447,100
Basic line	34,222,891	15,291,931	18,930,960	28,639,445	11,616,949	17,022,496
Reserve balance	19,846,321	7,666,756	12,179,565	16,555,821	7,046,961	9,508,860
MICHIGAN.						
Amount borrowed	72,008,241	65,856,699	6,151,542	60,004,067	47,789,776	12,214,291
Capital and surplus	85,776,050	65,591,000	20,185,050	91,042,200	69,236,000	21,806,200
Basic line	78,485,511	63,636,556	14,848,955	67,773,359	52,942,578	14,830,781
Reserve balance	44,351,068	35,116,282	9,234,786	37,789,938	29,290,104	8,499,834
Total:						
Amount borrowed	444,344,219	396,999,011	47,345,208	310,741,653	226,052,469	86,689,184
Capital and surplus	330,546,350	252,429,600	78,116,750	336,647,600	287,756,200	78,891,400
Basic line	392,401,866	324,765,410	67,636,456	327,033,147	268,240,972	58,792,175
Reserve balance	231,630,037	191,064,792	40,565,245	200,347,335	105,719,095	34,628,240

ELIMINATIONS.

Illinois.	Chicago.	Springfield.	Moline.	Rockford.	Total.
1920.					
Amount borrowed	$245,266,951	$667,450	$200,000		$246,134,401
Capital and surplus	169,450,500	400,000	950,000	$1,650,000	172,450,500
Basic line	213,250,759	281,062	391,900	1,047,650	214,971,371
Reserve balance	129,168,769	270,646	288,085	712,778	130,440,278
1921.					
Amount borrowed	113,999,118	340,700	250,000	732,690	115,322,508
Capital and surplus	173,013,500	400,000	950,000	2,075,000	176,438,500
Basic line	177,200,568	293,895	639,329	1,225,515	179,359,307
Reserve balance	114,540,631	232,941	449,673	583,563	115,806,808

Indiana.	Indianapolis.	South Bend.	Fort Wayne.	Total.
1920.				
Amount borrowed	$15,092,519	$242,750	$2,509,984	$17,845,253
Capital and surplus	7,975,000	765,000	2,225,000	10,965,000
Basic line	8,890,561	478,956	1,809,975	11,179,492
Reserve balance	6,041,985	251,150	1,206,099	7,499,234
1921.				
Amount borrowed	10,528,800	440,000	2,659,121	13,627,921
Capital and surplus	8,065,000	765,000	2,450,000	11,280,000
Basic line	7,045,374	462,645	1,645,067	9,153,096
Reserve balance	3,830,192	215,760	1,034,062	5,080,014

Digitized by Google

TABLE 20c.—*Seventh district*—Continued.

ELIMINATIONS—Continued.

Wisconsin.	Madison.	Milwaukee.	Racine.	Total.
1920.				
Amount borrowed	$252,022	$35,993,143	$259,000	$36,504,165
Capital and surplus	1,145,000	14,860,000	1,166,000	17,171,000
Basic line	626,862	17,930,699	1,128,499	19,686,060
Reserve balance	362,417	9,288,824	691,001	10,342,242
1921.				
Amount borrowed	358,630	28,686,741	640,000	29,685,371
Capital and surplus	610,000	15,150,000	1,168,000	16,928,000
Basic line	511,417	13,667,166	990,459	15,169,042
Reserve balance	285,228	7,701,876	508,104	8,495,208

Iowa.	Cedar Rapids.	Council Bluffs.	Davenport.	Des Moines.	Dubuque.	Sioux City.	Total.
1920.							
Amount borrowed	$4,435,500	$1,206,628	$1,518,551	$16,332,156	$615,305	$6,550,353	$30,658,493
Capital and surplus	1,500,000	730,000	2,100,000	6,560,000	760,000	2,574,500	14,224,500
Basic line	2,603,624	688,812	1,451,812	6,729,523	747,136	3,071,024	15,291,931
Reserve balance	1,285,007	317,127	811,122	3,434,831	390,189	1,428,480	7,666,756
1921.							
Amount borrowed	3,068,432	957,841	2,369,325	9,230,293	310,025	3,700,977	19,626,893
Capital and surplus	1,500,000	740,000	2,100,000	6,350,000	766,200	2,417,500	13,873,700
Basic line	1,614,632	507,667	1,467,912	5,241,429	400,480	2,384,829	11,616,949
Reserve balance	1,083,462	343,315	861,576	2,731,286	376,488	1,650,834	7,046,961

Michigan.	Grand Rapids.	Detroit.	Bay City.	Flint.	Jackson.	Lansing.	Saginaw.	Total.
1920.								
Amount borrowed	$5,185,146	$53,716,464	$2,092,000	$3,045,000	$879,589	.....	$938,500	$65,856,699
Capital and surplus	3,890,000	51,175,000	2,026,000	3,200,000	1,401,000	$1,150,000	2,750,000	65,591,000
Basic line	4,053,948	50,637,450	1,424,858	3,205,846	1,282,084	1,344,604	1,707,766	63,636,556
Reserve balance	2,194,843	28,179,273	749,446	1,642,301	691,254	723,348	935,817	35,116,282
1921.								
Amount borrowed	4,691,941	23,382,609	2,262,327	4,700,230	1,575,908	275,000	901,761	47,789,776
Capital and surplus	4,130,000	52,950,000	2,050,000	4,055,000	1,301,000	1,750,000	3,000,000	69,236,000
Basic line	3,302,667	42,314,465	1,249,169	2,043,259	990,269	1,394,222	1,648,529	52,942,578
Reserve balance	1,961,001	23,362,046	683,987	1,067,850	555,522	789,657	870,041	29,290,104

TABLE 20d.—*Ninth district.*

	Amount borrowed.		Capital and surplus, gross.	Basic line, gross.
	June 30, 1920, gross.	June 30, 1921, gross.		
Michigan	$570,542.10	$1,667,861.56	$2,461,000.00	$1,537,920.00
Montana	9,714,327.20	12,370,109.06	14,668,000.00	6,114,870.00
Minnesota	72,366,268.36	46,874,190.53	42,039,982.00	48,995,296.00
Minnesota minus elimination	7,349,676.70	9,643,401.98	19,989,982.00	10,485,152.00
Wisconsin	1,143,146.39	1,666,764.73	2,327,400.00	1,586,157.00
North Dakota	5,474,524.91	8,717,207.07	9,130,550.00	4,706,863.00
South Dakota	9,195,500.63	12,977,859.42	9,971,502.00	6,297,302.00
Total	98,464,309.59	84,273,992.37.	80,598,434.00	69,238,408.00

Digitized by Google

TABLE 20*d*.—*Ninth district*—Continued.

	Nonborrowing basic line.	Net basic line.	Reserve carried, gross.
Michigan		$1,537,920.00	$884,056.00
Montana		6,114,870.00	3,240,015.00
Minnesota	$1,509,642.00	47,485,654.00	20,733,186.00
Minnesota minus elimination	1,509,642.00	8,975,510.00	5,760,989.00
Wisconsin	63,135.00	1,523,022.00	1,076,338.00
North Dakota	62,107.00	4,644,756.00	2,663,399.00
South Dakota	391,782.00	5,905,520.00	3,385,649.00
Total	2,026,666.00	28,701,598.00	31,982,643.00

ELIMINATIONS.

Minnesota.	Duluth.	Minneapolis.	St. Paul.	Total.
Amount borrowed:				
June 30, 1920		$40,944,478.14	$24,072,113.52	$65,016,591.66
June 30, 1921		26,339,313.72	10,891,474.83	37,230,788.55
Capital and surplus	$1,600,000.00	12,800,000.00	7,650,000.00	22,050,000.00
Basic line	975,114.00	22,870,253.00	14,664,777.00	38,510,144.00
Reserve carried	527,949.00	8,222,807.00	6,221,441.00	14,972,197.00

Minnesota.	Gross.	Eliminations.	Nonborrowing.	Net.
Amount borrowed:				
June 30, 1920	$72,366,268.36	$65,016,591.66		$7,349,676.70
June 30, 1921	46,874,190.53	37,230,788.55		9,463,401.98
Capital and surplus	42,039,982.00	22,050,000.00		19,989,982.00
Basic line	48,995,296.00	38,510,144.00	$1,509,642.00	8,975,510.00
Reserve carried	20,733,186.00	14,972,197.00		5,760,989.00

TABLE 20*e*.—*Tenth district*.

	1920		
	Gross total.	Eliminations.	Net total.
Colorado:			
Amount borrowed	$12,001,353.75	$6,542,020.68	$5,459,333.07
Capital and surplus	12,757,500.00	7,272,000.00	5,485,500.00
Basic line	14,239,413.00	9,868,292.00	4,371,121.00
Reserve balance	7,788,788.00	5,377,066.00	2,411,722.00
Kansas:			
Amount borrowed	10,347,715.43	4,023,007.69	6,324,707.74
Capital and surplus	11,662,100.00	3,185,000.00	8,477,100.00
Basic line	8,938,919.00	2,909,320.00	6,029,599.00
Reserve balance	5,026,875.00	1,726,580.00	3,300,295.00
Missouri:			
Amount borrowed	48,303,646.17	47,455,433.01	848,213.16
Capital and surplus	25,579,050.00	24,237,500.00	1,341,550.00
Basic line	28,111,244.00	27,006,592.00	1,104,652.00
Reserve balance	16,820,362.00	16,279,399.00	540,963.00
Nebraska:			
Amount borrowed	30,084,792.11	21,954,131.86	8,130,666.25
Capital and surplus	22,601,000.00	12,535,000.00	10,066,000.00
Basic line	21,449,528.00	14,236,031.00	7,213,497.00
Reserve balance	11,846,076.00	8,004,747.00	3,841,329.00
Oklahoma:			
Amount borrowed	16,866,024.52	8,220,604.91	8,645,419.61
Capital and surplus	18,384,950.00	7,653,000.00	10,731,950.00
Basic line	23,168,258.00	12,915,085.00	10,253,173.00
Reserve balance	12,653,888.00	7,268,883.00	5,385,005.00
New Mexico:			
Amount borrowed	742,865.21		742,865.21
Capital and surplus	682,500.00		682,500.00
Basic line	519,837.00		519,837.00
Reserve balance	277,994.00		277,994.00
Wyoming:			
Amount borrowed	3,022,490.74		3,022,490.74
Capital and surplus	3,207,500.00		3,207,500.00
Basic line	3,096,148.00		3,096,148.00
Reserve balance	1,765,314.00		1,765,314.00
Total:			
Amount borrowed	121,368,887.93	88,195,198.15	33,173,689.78
Capital and surplus	94,874,600.00	54,882,500.00	39,992,100.00
Basic line	99,523,347.00	66,935,320.00	32,588,027.00
Reserve balance	56,179,297.00	38,656,675.00	17,522,622.00

Digitized by Google

TABLE 20e.—*Tenth district*—Continued.

	1921		
	Gross total.	Eliminations.	Net total.
Colorado:			
Amount borrowed	$11,037,351.75	$5,295,125.00	$5,712,226.75
Capital and surplus	17,177,500.00	9,239,000.00	7,938,500.00
Basic line	15,795,773.00	10,768,188.00	5,027,585.00
Reserve balance	8,323,896.00	5,477,575.00	2,846,321.00
Kansas:			
Amount borrowed	6,338,193.97	4,023,007.69	2,315,186.28
Capital and surplus	12,279,344.00	3,185,000.00	9,094,344.00
Basic line	7,479,248.00	2,909,320.00	4,569,928.00
Reserve balance	4,124,851.00	1,726,580.00	2,398,271.00
Missouri:			
Amount borrowed	23,895,186.52	23,125,641.20	769,545.32
Capital and surplus	24,746,600.00	22,562,500.00	2,184,100.00
Basic line	23,692,367.00	22,723,333.00	969,034.00
Reserve balance	13,027,375.00	12,513,996.00	1,513,379.00
Nebraska:			
Amount borrowed	13,280,590.42	6,091,303.34	7,189,287.08
Capital and surplus	19,219,320.00	8,460,000.00	10,759,320.00
Basic line	13,506,616.00	7,621,348.00	5,885,268.00
Reserve balance	7,433,241.00	4,358,133.00	3,075,108.00
Oklahoma:			
Amount borrowed	18,692,231.17	8,338,696.48	10,353,534.69
Capital and surplus	23,483,093.00	8,906,000.00	14,577,093.00
Basic line	22,347,054.00	10,583,507.00	11,763,547.00
Reserve balance	11,350,762.00	5,353,258.00	5,997,504.00
New Mexico:			
Amount borrowed	897,224.45		897,224.45
Capital and surplus	1,358,500.00		1,358,500.00
Basic line	890,957.00		890,957.00
Reserve balance	542,439.00		542,439.00
Wyoming:			
Amount borrowed	4,461,024.33		4,461,024.33
Capital and surplus	4,383,500.00		4,383,500.00
Basic line	3,411,286.00		3,411,286.00
Reserve balance	1,880,876.00		1,880,876.00
Total:			
Amount borrowed	78,601,804.61	46,873,773.71	31,728,028.90
Capital and surplus	102,647,857.00	44,738,500.00	50,295,357.00
Basic line	87,123,301.00	54,605,696.00	32,517,605.00
Reserve balance	46,683,440.00	29,429,542.00	18,253,898.00

ELIMINATIONS.

Colorado.	1920				1921		
	Cripple Creek.	Colorado Springs.	Denver.	Total.	Colorado Springs.	Denver.	Total.
Amount borrowed	$125,000	$427,875.09	$6,114,145.59	$6,542,020.68	$312,859.50	$4,982,265.50	$5,295,125.00
Capital and surplus	60,000	800,000.00	6,472,000.00	7,272,000.00	700,000.00	8,539,000.00	9,239,000.00
Basic line	206,875	805,037.00	9,063,255.00	9,868,292.00	604,175.00	10,164,013.00	10,768,188.00
Reserve balance	105,731	464,251.00	4,912,815.00	5,377,066.00	318,346.00	5,159,229.00	5,477,575.00

Kansas.	1920			1921		
	Kansas City.	Wichita.	Total.	Kansas City.	Wichita.	Total.
Amount borrowed	$1,702,253.15	$2,320,754.54	$4,023,007.69	$420,709.02	$926,448.30	$1,347,157.32
Capital and surplus	1,175,000.00	2,010,000.00	3,185,000.00	9,239,000.00	1,550,000.00	10,789,000.00
Basic line	1,086,306.00	1,823,014.00	2,909,320.00	10,768,188.00	1,173,554.00	11,941,742.00
Reserve balance	610,172.00	1,116,408.00	1,726,580.00	5,477,575.00	692,200.00	6,169,775.00

Missouri.	1920			1921		
	Kansas City.	St. Joseph.	Total.	Kansas City.	St. Joseph.	Total.
Amount borrowed	$44,511,834.51	$2,943,598.50	$47,455,433.01	$21,197,685.68	$1,927,955.52	$23,125,641.20
Capital and surplus	22,237,500.00	2,000,000.00	24,237,500.00	20,862,500.00	1,700,000.00	22,562,500.00
Basic line	24,416,002.00	2,590,590.00	27,006,592.00	21,373,401.00	1,349,932.00	22,723,333.00
Reserve balance	14,752,886.00	1,526,513.00	16,279,399.00	11,866,886.00	647,110.00	12,513,996.00

TABLE 20*e*.—*Tenth district*—Continued.

ELIMINATIONS—Continued.

Nebraska.	1920			1921		
	Omaha.	Lincoln.	Total.	Omaha.	Lincoln.	Total.
Amount borrowed..	$19,308,935.02	$2,645,196.84	$21,954,131.86	$5,693,950.98	$1,297,352.36	$6,091,303.34
Capital and surplus..	10,400,000.00	2,135,000.00	12,535,000.00	6,350,000.00	2,110,000.00	8,460,000.00
Basic line.....	11,648,318.00	2,587,713.00	14,236,031.00	6,012,908.00	1,608,440.00	7,621,348.00
Reserve balance.....	6,674,770.00	1,329,977.00	8,004,747.00	3,462,748.00	895,385.00	4,358,133.00

Oklahoma.	1920			1921		
	Oklahoma City.	Tulsa.	Total.	Oklahoma City.	Tulsa.	Total.
Amount borrowed..	$3,453,508.86	$4,767,096.05	$8,220,604.91	$3,691,184.70	$4,647,511.78	$8,338,696.48
Capital and surplus..	3,953,000.00	3,700,000.00	7,653,000.00	4,301,000.00	4,605,000.00	8,906,000.00
Basic line.....	6,238,761.00	6,676,324.00	12,915,085.00	4,536,048.00	6,047,459.00	10,583,507.00
Reserve balance.....	3,148,916.00	4,119,967.00	7,268,883.00	2,472,055.00	2,881,203.00	5,353,258.00

TABLE 20*f*.—*Eleventh district*.

SUMMARY NO. 1.—RECAPITULATION BY BRANCHES.

	Capital and surplus.	Reserve balance.	Basic line.			Liability.
			Gross.	Nonborrowing.	Net.	
1920.						
Head office.....	$59,568,989	$20,570,574.00	$43,216,037.00	.....	$43,216,037.00	$56,378,681.00
Houston branch.....	18,853,000	8,914,866.00	14,771,449.00	.....	14,771,449.00	19,619,548.00
El Paso branch.....	9,594,950	4,448,572.84	7,943,137.21	$1,639,823.56	6,303,313.65	6,586,724.15
Total eleventh Federal reserve district.....	88,653,826	33,934,012.84	65,930,623.21	1,639,823.56	64,290,799.65	82,584,953.15
1921.						
Head office.....	76,481,157	19,927,089.00	39,178,278.00	.....	39,178,278.00	52,268,990.00
Houston branch.....	20,235,419	7,947,010.00	8,261,985.00	159,137.00	8,102,848.00	8,656,529.00
El Paso branch.....	9,937,250	3,520,075.75	6,451,143.04	574,978.30	5,876,164.74	11,692,932.32
Total eleventh Federal reserve district.....	106,653,826	31,394,174.75	53,891,406.04	734,115.30	53,157,290.74	72,618,451.32

RECAPITULATION BY STATES.

1920.						
Texas.....	$77,899,230	$29,917,243.63	$57,891,768.48	$825,790.58	$57,065,977.90	$73,626,689.27
Arizona.....	820,000	712,218.61	1,250,292.57	462,484.98	787,807.59	560,603.77
New Mexico.....	4,658,950	1,454,764.60	2,676,062.16	351,548.00	2,324,514.16	3,745,094.11
Oklahoma.....	1,997,259	684,309.00	1,080,326.00	.....	1,080,326.00	2,676,936.00
Louisiana.....	2,641,500	1,165,477.00	3,032,174.00	.....	3,032,174.00	1,975,630.00
Total eleventh Federal reserve district.....	88,016,939	33,934,012.84	65,930,623.21	1,639,823.56	64,290,799.65	82,584,953.15
1921.						
Texas.....	94,787,421	27,752,140.22	47,070,838.06	438,063.37	46,632,774.69	59,415,226.48
Arizona.....	1,360,000	554,908.37	999,584.67	232,537.77	767,046.90	1,090,280.58
New Mexico.....	4,189,250	1,137,107.16	2,153,797.31	63,514.16	2,090,283.15	5,667,719.26
Oklahoma.....	1,992,155	531,584.00	974,137.00	.....	974,137.00	3,071,870.00
Louisiana.....	4,325,000	1,398,435.00	2,693,049.00	.....	2,693,049.00	3,373,355.00
Total eleventh Federal reserve district.....	106,653,826	31,394,174.75	53,891,406.04	734,115.30	53,157,290.74	72,618,451.32

Digitized by Google

TABLE 20e.—*Eleventh district*—Continued.

SUMMARY NO. 2.

	Gross total.	Eliminations.	Nonborrowing.	Net total.
1920.				
Head office:				
Capital and surplus	$59,568,989.00	$13,230,000.00		$46,338,989.00
Reserve balance	20,570,574.00	5,624,416.00		14,946,158.00
Basic line	43,216,037.00	14,789,324.00		28,426,713.00
Liability	56,378,681.00	15,794,524.00		40,584,157.00
El Paso:				
Capital and surplus	9,594,950.00			9,594,950.00
Reserve balance	4,448,572.84			4,448,572.84
Basic line	7,943,137.21		$1,639,823.56	6,303,313.65
Liability	6,586,724.15			6,586,724.15
Houston:				
Capital and surplus	18,853,000.00	8,960,000.00		9,893,000.00
Reserve balance	8,914,866.00	5,710,192.00		3,204,674.00
Basic line	14,771,449.00	10,153,195.00		4,618,254.00
Liability	19,619,548.00	13,217,716.00		6,401,832.00
Total, Eleventh Federal Reserve District:				
Capital and surplus	88,016,939.00	22,190,000.00		65,829,939.00
Reserve balance	33,934,012.84	11,334,608.00		22,599,404.84
Basic line	65,930,623.21	24,942,519.00	1,639,823.56	39,348,280.65
Liability	82,584,943.15	29,012,240.00		53,572,713.15
1921.				
Head office:				
Capital and surplus	76,481,157.00	16,970,000.00		59,511,157.00
Reserve balance	19,927,089.00	6,975,107.00		12,951,982.00
Basic line	39,178,278.00	13,027,734.00		26,150,544.00
Liability	52,268,990.00	9,565,202.00		42,703,788.00
El Paso:				
Capital and surplus	9,937,250.00			9,937,250.00
Reserve balance	3,520,075.75			3,520,075.75
Basic line	6,451,143.04		574,978.30	5,876,164.74
Liability	11,692,932.32			11,692,932.32
Houston:				
Capital and surplus	20,235,419.00	921,000.00		11,025,419.00
Reserve balance	7,947,010.00	5,193,182.00		2,753,828.00
Basic line	8,261,985.00	3,675,139.00	159,137.00	4,427,709.00
Liability	8,656,529.00	1,738,244.00		6,918,285.00
Total, Eleventh Federal Federal District:				
Capital and surplus	106,653,826.00	26,180,000.00		80,473,826.00
Reserve balance	31,394,174.75	12,168,289.00		19,225,885.75
Basic line	53,891,406.04	16,702,873.00	734,115.30	36,454,417.74
Liability	72,618,451.32	11,303,446.00		61,315,005.32

ELIMINATIONS.

[Supporting column No. 2 of summary No. 2.]

	Dallas.	Fort Worth.	San Antonio.	Galveston.	Houston.	Total.
1920.						
Head office:						
Capital and surplus	$4,250,000	$6,100,000	$2,880,000			$13,230,000
Reserve balance	1,248,481	3,095,290	1,280,645			5,624,416
Basic line	5,090,122	6,702,196	2,997,006			14,789,324
Liability	3,710,617	10,092,407	1,991,500			15,794,524
Houston:						
Capital and surplus				$660,000	$8,300,000	8,960,000
Reserve balance				578,193	5,131,999	5,710,192
Basic line				853,934	9,299,261	10,153,195
Liability				272,610	12,945,106	13,217,716
Total Eleventh Federal Reserve District:						
Capital and surplus	4,250,000	6,100,000	2,880,000	660,000	8,300,000	22,190,000
Reserve balance	1,248,481	3,095,290	1,280,645	578,193	5,131,999	11,334,608
Basic line	5,090,122	6,702,196	2,997,006	853,934	9,299,261	24,942,519
Liability	3,710,617	10,092,407	1,991,500	272,610	12,945,106	29,012,240
1921.						
Head office:						
Capital and surplus	7,975,000	4,100,000	4,895,000			16,970,000
Reserve balance	3,551,273	1,695,018	1,728,816			6,975,107
Basic line	6,124,134	3,580,979	3,322,621			13,027,734
Liability	3,482,490	2,680,990	3,401,722			9,565,202

Digitized by Google

TABLE 20e.—*Eleventh district*—Continued.

ELIMINATIONS—Continued.

	Dallas.	Fort Worth.	San Antonio.	Galveston.	Houston.	Total.
1921.						
Houston:						
Capital and surplus	.....	.....	.....	700,000	8,510,000	9,210,000
Reserve balance	.....	.....	.....	492,828	4,700,354	5,193,182
Basic line	.....	.....	.....	.....	3,675,139	3,675,139
Liability	.....	.....	.....	.....	1,738,244	1,738,244
Total Eleventh Federal Reserve District:						
Capital and surplus	7,975,000	4,100,000	4,895,000	700,000	8,510,000	26,180,000
Reserve balance	3,551,273	1,695,018	1,728,816	492,828	4,700,354	12,168,289
Basic line	6,124,134	3,580,979	3,322,621	.....	3,675,139	17,277,851
Liability	3,482,490	2,680,990	3,401,722	.....	1,738,244	11,303,446

NONBORROWING BANKS.

[Supporting column No. 3 of Summary No. 2.]

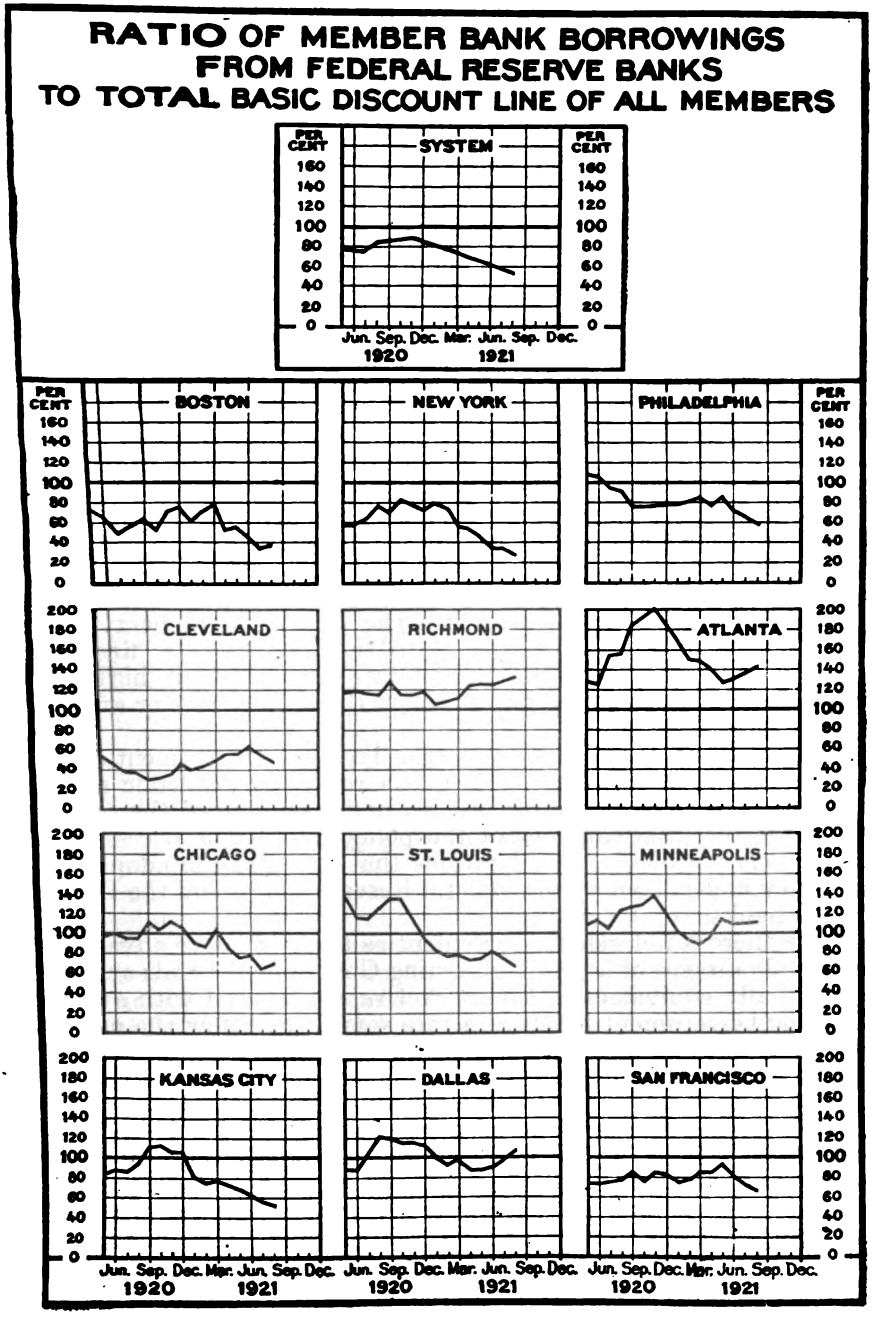
	Capital and surplus.	Reserve balance.	Basic line.			Liability.
			Gross.	Nonborrowing.	Net.	
EL PASO BRANCH.						
1920: New Mexico	$4,658,950.00	$1,454,764.60	$2,676,062.16	$351,548.00	$2,324,514.16	$3,745,094.11
Arizona	820,000.00	712,218.61	1,250,292.57	462,484.98	788,807.59	560,603.77
Texas	4,116,000.00	2,281,589.63	4,016,782.48	825,790.58	3,190,991.90	2,281,026.27
Total	9,594,950.00	4,448,572.84	7,943,137.21	1,639,823.56	6,303,313.65	6,586,724.15
1921: New Mexico	4,189,250.00	1,137,107.16	2,153,797.31	63,514.16	2,090,273.15	5,667,719.26
Arizona	1,360,000.00	554,908.37	999,584.67	232,537.77	767,046.90	1,090,280.58
Texas	4,388,000.00	1,828,060.22	3,297,761.06	278,926.37	3,018,834.69	4,934,932.48
Total	9,937,250.00	3,520,075.75	6,451,143.04	574,978.30	5,876,154.74	11,692,932.32
HOUSTON BRANCH.						
1920	18,853,000.00	8,914,866.00	14,771,449.00	.....	4,618,254.00	19,619,548.00
1921	20,235,419.00	7,947,010.00	8,261,985.00	159,137.00	8,102,848.00	8,656,529.00

Chart F, on page 79 shows the ratio of member bank borrowings from Federal reserve banks to total discount basic line of all members:

An examination of this chart shows that the borrowings of member banks in the Atlanta and Richmond districts were in excess of their total basic line during the entire period from June, 1920, to July, 1921. The borrowings of the member banks in the Minneapolis district were in excess of the total basic line of all members during all of this period except in March and April 1921.

Digitized by Google

CHART F.



NOTE.—A bank's basic discount line is obtained by multiplying 65 per cent of its average reserve balance maintained with its Federal reserve bank during the preceding month plus its paid-in subscription to the capital stock of the Federal reserve bank by 2½.

Digitized by Google

Chapter III.

POLICY OF THE TREASURY IN FINANCING GOVERNMENT LOANS IN RELATION TO THE FEDERAL RESERVE POLICY.

No adequate consideration can be given to the Federal reserve policy during the period of war finance without considering at the same time how that policy was affected by and in great measure controlled by the necessities and consequently the policy of the Treasury Department.

It may be assumed for the purpose of this discussion that the total requirements of the war for goods and services could not be immediately provided out of either increased production or decreased consumption so as to avoid competition for goods and labor. If this be assumed, it is clear that some portion of the cost of the war must be furnished through increase of bank credits. That is to say, the Government must borrow the money necessary to carry on the war with the expectation that the money would be eventually paid through taxation out of the profits of later production. The method of raising this money was by the sale of Government bonds to the people, the effect of which was that the people who bought the bonds loaned their credit temporarily to the Government. In reality, however, this credit was in part manufactured in the method described later.

The principal question that arose in the marketing of these bonds was that of the interest rate which the bonds should bear. Two policies were possible with respect to the interest rate, first, the policy of selling bonds at the market rate or a relatively high rate, and, second, the sale of the bonds below the market rate or at a low rate.

A discussion of the rate policy of the Treasury Department during this period may seem more or less theoretical or academic at this time, but it is undertaken because an understanding of the relative advantages or disadvantages of the policy adopted is necessary to an appreciation of the considerations that impelled the adoption of the policy undertaken by the Federal Reserve Board and the Federal reserve banks.

While there is not general agreement as to the relative advantages and disadvantages of a policy of issuing Government bonds at a rate substantially equivalent to the market rate compared with a policy of issuing Government bonds at a rate somewhat below the market, the considerations in favor of the first policy may be thus stated: First, the high rate of interest would encourage saving on the part of the public in order to obtain the advantage of the rate; second, it would result in a transfer of existing capital from nonessential and low-rate investments to Government bonds; third, it would absorb free capital and discourage nonessential production, limit expansion and inflation and reduce consumption, all of which would have the tendency to retard the rise of prices—lower prices would reduce the amount of money required by the Government in the prosecution of the war, and consequently the amount which it would have to borrow—and, fourth, the higher rate would have tended to maintain the price of bonds at par.

Digitized by Google

On the other hand, it could be urged in favor of the low-rate policy that the Treasury was obligated to secure the funds necessary to the prosecution of the war at the lowest possible rate, but this reason would be sound only if it required the same amount of money to finance the war at a high rate of interest as it would at a low rate of interest.

It was necessary also for those who were responsible for the policy adopted to bear in mind that any policy adopted should be designed to avoid too sudden changes in rates which are likely to result in rapid changes in the general interest rates applicable to loans, with resulting dislocation and embarrassment to industry.

The commission is of the opinion that the lower rate of interest was more than offset by the inflation which it occasioned and the attendant high prices which accompanied the inflation. That is to say, from the standpoint of Government finance alone the total expenditure for interest and principal for the conduct of the war was probably larger as the result of the adoption of the low-rate policy than it would have been had the high-rate policy been adopted. Investors who bought the bonds from patriotic motives suffered both on account of the low rate and the depreciation of the market value of the bonds which it occasioned and the whole country from the increased total aggregate of the cost of the war, which the public must eventually pay.

If it is assumed that the cost of the war was not or could not have been paid from current savings or increased production, it is evident that the remainder of the cost must be paid, in the first place, by inflation of credit, i. e., by the manufacture of credit. The advantages or disadvantages, therefore, of the market or low-rate policies is measured by the inflation required under the one policy or the other. It is the opinion of the commission that this inflation required under the lower-rate policy was measurably greater than the inflation which would have been required under the high-rate policy.

INFLATION OR MANUFACTURE OF CREDIT.

This inflation, or manufacture of credit, was accomplished through the machinery of the Federal reserve banks substantially as follows: Buyers of Liberty bonds were encouraged to borrow from their local banks the money necessary for the purchase of the bonds at the same rates of interest that were paid on the bonds, depositing the bonds as collateral for the loans. This would result in an increase in the loans and discounts of the lending bank and an increase in the deposit to the credit of the Government. As small margins, and in some cases practically none, were required from borrowers by the banks on loans, the interest received from the bonds practically paid the interest due the banks on the purchasers' notes, so that the bonds, for a time at least, practically carried themselves without additional payment on the part of the purchaser. The funds paid to the bank for the Government's account by the purchaser were usually left by the Government on deposit at the banks for some weeks at the low interest rate of 2 per cent, without the requirement of any reserve against the deposit. This made the transaction a profitable one for the banks and tended to inflation by increasing the deposits of the banks available for short-time loans to their customers.

Digitized by Google

When later the Government called upon the banks for funds, the Federal reserve banks stood ready to loan to the member banks the funds necessary for meeting the Government's call, accepting as collateral at par the banks' notes with the bonds attached or rediscounting these notes. The bonds thus deposited as collateral by the member banks became the basis of reserve deposits in the Federal reserve banks and of currency issues which automatically adjust roughly in the ratio of 2 to 3. That is to say, for every $5 thus borrowed, about $2 would appear on the Federal reserve banks' books as member banks' reserve deposits and about $3 would be in the form of currency issued to the member banks. Deposits thus created would become in fact reserves against which future loan and deposit expansion would arise.

According to computations made by Prof. Warren M. Persons in the Harvard Review of Economic Statistics, January, 1920, the possible credit expansion in the form of Federal reserve notes and deposits of member banks is in the neighborhood of $11 or $12 for every dollar of ultimate reserves; i. e., gold and lawful money kept in the vaults of Federal reserve banks. A deposit, therefore, of $100,000 of gold or lawful money in a member bank and by it deposited in a Federal reserve bank will permit an increase of about $1,100,000 or $1,200,000 in loans of member banks, and an equal increase in Federal reserve notes and deposits of member banks combined.

In addition, when the funds paid in by the purchasers of the bonds were withdrawn from the member banks by the Government, they were usually immediately paid directly, or through loans to the allied Governments, to American producers for war material and other war purposes, and promptly found their way back into the banks of the country in the form of commercial deposits. In this way the assets and liabilities of the Federal reserve banks and reporting member banks were increased, as indicated in Table 21:

TABLE 21.—*Assets and liabilities of Federal reserve bank and reporting member banks, April, 1917–June, 1921.*

[In thousands of dollars.]

Date.	Federal reserve banks.			Reporting member banks.	
	Total earning assets.	Member bank reserve deposits.	Federal reserve notes in actual circulation.	Total loans and discounts and investments, net.[1]	Net demand deposits.
Apr. 6, 1917	225,541	758,219	376,510	.....	.....
Dec. 28, 1917	1,064,310	1,453,166	1,246,488	11,026,093	8,570,283
Jan. 3, 1919	2,275,033	1,602,901	2,647,605	13,697,800	10,145,058
Jan. 2, 1920	3,181,808	1,922,800	2,998,992	15,648,071	11,596,451
Dec. 31, 1920	3,234,828	1,780,449	3,336,281	15,287,896	10,941,847
June 29, 1921	2,060,495	1,641,156	2,634,475	14,429,950	10,046,398

[1] Exclusive of paper rediscounted with Federal reserve banks.

The general policy of expansion and manufacture of credit—that is, the expansion of loans and discounts resulting from sales of bonds by plans designed to induce the banks to loan to the subscriber the funds necessary for the purchase of the bonds at a rate not exceeding that which the bonds carried—obliged the Federal reserve banks to extend credit without loss to the member banks, or even to furnish

Digitized by Google

a profit on the transaction in the first instance, which they did by permitting the member banks to borrow from Federal reserve banks at a rate of discount not above and frequently lower than the rate borne by the bonds. That is to say, the successful sale of the Liberty bonds at a low rate of interest was necessarily predicated upon a low discount rate policy on the part of the Federal Reserve Board and the Federal reserve banks.

The low-rate policy adopted was contrary to the policy of the banks of issue of the great financial countries of the world prior to the war and in a number of cases during the war. This difference in policy is discussed in Chapter 5 on the Federal reserve policy as indicated by a comparison of interest rates on certificates of indebtedness, bank acceptances, commercial paper, and discount rates.

In the interim between the Government war loans, certificates of indebtedness were issued by the Treasury Department in anticipation of these loans and the payment of taxes, in order to provide the Government with funds with which to meet the current requirements of the war. A concurrent purpose was to afford an opportunity for business to invest current funds being accumulated for the purchase of bonds and the payment of taxes. These issues of certificates of indebtedness were probably more important in the creation of bank credit and the expansion of loans and discounts than even the issues of Liberty bonds and Victory notes, because the primary ownership of a very large proportion of them during the war years remained with the banks. Certificates of indebtedness were issued at low rates of interest, which made selling them to the general public upon an investment basis difficult, if not impossible. This made necessary the disposal of the bonds to the banks during the war period and the latter months of 1919 and the first half of 1920 on a basis which would make it profitable for the banks to handle them.

The method of handling the deposits created by the sale of certificates was so designed as to provide a somewhat larger return than the rate of interest borne by the certificates themselves. A bank subscribing for certificates of indebtedness usually opened on its books an account in favor of the Federal reserve bank as fiscal agent of the United States in the full amount of its subscription. The effect of the transaction was simply to increase equally the deposits and loans of the subscribing banks. The banks paid interest on such deposits at the rate of 2 per cent per annum, but the deposits were not called for by the Federal reserve bank as agent of the Government until the funds were required for the uses of the Treasury Department. As such needs arose deposits were drawn upon ratably, and frequently a considerable period elapsed before they were entirely drawn down. No reserves were required against these deposits, though adequate collateral was required to be furnished. If the banks were not in a position to provide the funds with which to meet the withdrawal of deposits, the Federal reserve bank stood ready to lend the required amounts at a rate of discount lower, or at least no higher than the rates carried by the certificates. In this way a proportion of the credit expansion implied in the making of these loans to the Government was transferred from the member banks to the Federal reserve bank.

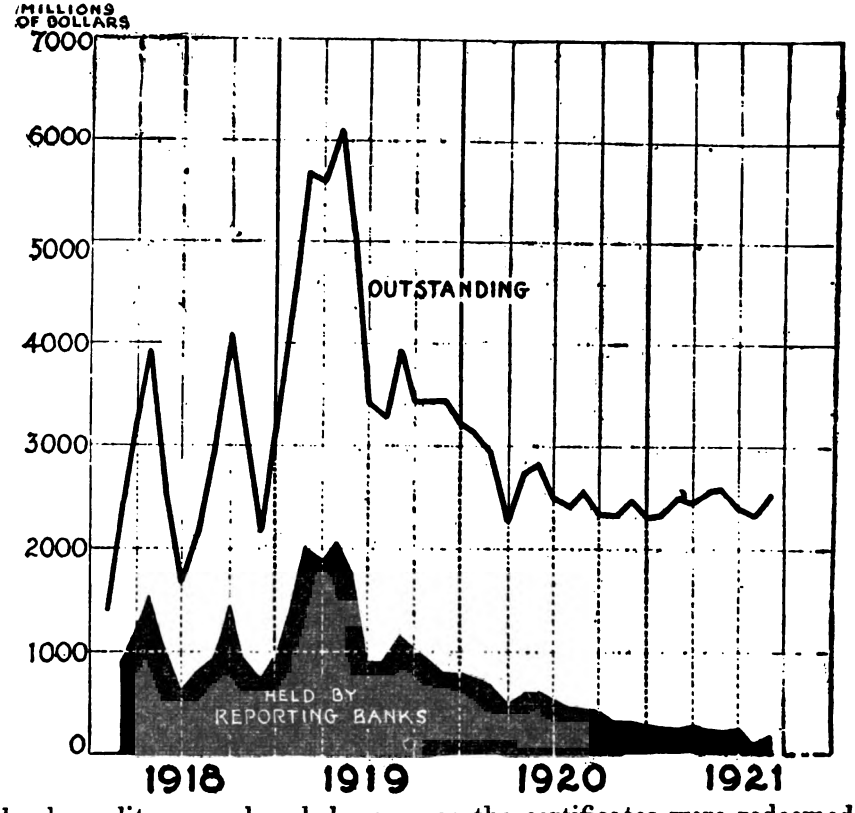
As the deposits thus created were drawn upon by member banks for the purpose of meeting their requirements for vault cash and till money, part of the deposits corresponding to the amount thus drawn were converted into Federal reserve notes.

Digitized by Google

As the funds were paid out by the Government to manufacturers, merchants, or others, or to the allies, who in turn paid them over to American manufacturers or merchants, the funds promptly found their way back into the banks as individual deposits. Against these deposits the member banks were required to maintain reserves, thereby increasing the loans and the deposit liabilities of the Federal reserve bank.

When the sale of long-time Government bonds took place, short-time certificates of indebtedness issued in anticipation of them were retired. In so far as the funds were purchased by investors who were able to buy without recourse to the banks for loans, the inflation of

CHART G.—CERTIFICATES OF INDEBTEDNESS OUTSTANDING IN THE UNITED STATES AND AMOUNT HELD BY REPORTING BANKS.



bank credit was reduced, because as the certificates were redeemed the banks not only reduced the total of their own investments but they were enabled to reduce their debts at the Federal reserve banks, thereby preparing themselves for another period of short-time Government accommodation.

After the first few months of 1920 it became more and more apparent that certificates of indebtedness were passing from the possession of the banks into the hands of private investors. Chart G, above, shows the proportion that the amount of certificates of indebtedness held by member banks throughout the country has borne to the total amount of certificates sold and not matured.

Digitized by Google

Chapter IV.

FEDERAL RESERVE POLICY IN 1920.

By September, 1920, the decline of prices was well underway. The general commodity index had fallen from a peak of 272 to 242, and the index of agricultural products from 244 to 210.

There was strong feeling that this decline was due to the policy of the Federal Reserve Board and the Federal reserve banks, and that an amelioration of this policy in the direction of lower discount rates would result in retarding if not wholly arresting it. Representations to this end were made to the Federal Reserve Board by representatives of various interests, particularly by the cotton interests of the South, by Members of Congress, and by the Comptroller of the Currency, and others. No change in the discount rate policy resulted from these representations.

The result of a change of policy in the direction of lower discount rates in the midst of a decline of prices and liquidation of stocks is exceedingly difficult to measure. It is clear, however, that any change of policy which could have been undertaken at that time must have been undertaken with a view of accomplishing the definite result of arresting the processes of liquidation, which were then in full swing. This was the purpose for which the change in policy was urged upon the Board. Inasmuch as no change in the policy resulted, any discussion of what might have happened, had the change in policy been accomplished, must be largely speculative. In view of the fact, however, that this question has been raised both before the Board and before this commission, it seems necessary to undertake the discussion.

The function of a bank of issue is primarily to regulate credit in such a way that it will bear an appropriate relation to demands and requirements of business. This regulation is accomplished partly by the automatic operation of the system itself, which adjusts issues of Federal reserve note currency to demands and requirements of business and partly through the application of discount rates, which must be determined with reference to all of the conditions—economic, industrial, and financial—existing at the time. The factors to be considered in determining the rate policy of a bank of issue include among others, the conditions of the lending banks of the country, the status of the reserve ratio of the Federal reserve banks, the credit accommodations of the Federal reserve banks that can be made available to member banks without impairing the gold reserve required by law, the possibility of gold withdrawals which would impair the ratio, and the general condition of business of the country.

As indicated elsewhere in this report, the commission is of the opinion that among the major economic factors which influenced the decline in prices, particularly of agricultural products, was the falling off of exports of those products and the falling off of a very heavy and

Digitized by Google

highly speculative demand, accompanied by an actual reduction in domestic consumption in the latter part of 1920 and the first half of 1921. Influential as these economic factors were, it is quite likely that the changes in the psychological attitude of the people, which seem to occur in the height of the period of prosperity, accompanied by extravagance and speculation, were even more influential. These psychological forces, once started in motion in one direction, are exceedingly difficult to check.

During 1919 there was very great complaint on all sides against the high cost of living. This complaint was not confined to any class, but was generally made among all classes of people. The extent of the concern which the situation was creating in the country is indicated by the fact that on May 17, 1920, the Senate of the United States adopted a resolution requiring the Federal Reserve Board to "advise the Senate what steps it proposed to take or recommend to the member banks of the Federal reserve system to meet the existing inflation of currency and credits and the consequent high prices."

Newspapers the country over engaged in a propaganda directed to the reduction of commodity prices, and all of these factors, coupled with the exhaustion of credit and credit resources by the producing and consuming public, combined to produce in the public mind a reversal of the psychological attitude which had contributed to inflation of prices and bank credit.

These forces now combined to produce the opposite result. With the beginning of the drop in prices, which was heralded the country over as the inauguration of a period of deflation, the psychology of fear and timidity was introduced into the minds of the bankers of the country, which led them to more or less ignore the maxim that in times of credit strain money should be lent freely at the market, even though at a high rate, and to bring pressure upon their borrowers for the liquidation of loans.

Merchants and farmers were obliged to put stocks on the market to liquidate loans; buyers stopped buying, except from day to day, in anticipation of lower prices; orders which had piled up in great volume and duplication during the period of expansion were canceled; consumers who had spent freely and extravagantly began to buy conservatively, and only to meet essential immediate needs; production slowed down and unemployment increased, with further reduction in consumers' demand. These factors combined to depress prices.

It seems probable that a change in the policy of the Federal reserve system with reference to discount rates would have accomplished a reversal in part of the psychological and economic factors which at this time were moving in the direction of lower prices, and at the same time would have tended to induce on the part of banks a more liberal attitude of furnishing additional credit.

A policy of lower discount rates at this period of liquidations of stock and decline of prices must necessarily contemplate that the policy will be made effective in a more liberal policy in the extension of loans. From a banking point of view, the desirability of a liberal policy in the extension of loans must depend upon the supply of funds available for this purpose. That is to say, a bank can lend freely only when its condition is such that it can do so without endangering the interests of its depositors and its stockholders.

Digitized by Google

Therefore, in order to ascertain whether a more liberal policy on the part of the banks of the country generally was desirable in the latter months of 1920, recourse must be had to the condition of the banks at that time. This condition varied very widely. In general, one-third of the banks were very greatly extended; about one-third were moderately extended, and the other one-third were lending within very conservative limits. This condition was indicated by the number of member banks borrowing from the Federal reserve system; about one-third were borrowing very heavily, one-third were borrowing moderately, and one-third were not borrowing at all. Obviously, the one-third that were not borrowing at all could borrow from the Federal reserve banks to meet their requirements without difficulty; the one-third that were borrowing moderately could borrow additional funds; and the third that were greatly extended and were, therefore, the more heavily pressed by their customers for additional loans, could not borrow in order to extend still further credit without endangering their own solvency.

When a bank has reached the point where it can not make additional loans without dangerously decreasing the ratio of capital to loans and discounts, or of capital to deposits—that is, without reducing the margin of safety to its depositors below the safety point—the remedy is not in increasing its borrowings from the Federal reserve bank, or from other banks, for the benefit of its customers, but in increasing its capital, and hence the margin of safety, which will justify an increase in deposits, loans, and discounts. The real limit of the member bank's ability to accommodate its customers is not the amount which it can borrow from the Federal reserve bank, but the amount which it can borrow from the Federal reserve bank and lend to its customers without endangering the funds of its depositors. This, in its turn, depends upon the relation of the bank's capital and surplus to its deposits.

In this connection the commission wishes to call attention to the fact that banking capital has not kept pace with deposits during the recent period of inflation. The report of the Comptroller of the Currency for 1920 shows that from June 30, 1913, to June 30, 1920, the deposits of national banks increased from $8,143,929,000 to $17,135,421,000. In the same period, capital and surplus of national banks increased from $2,056,667,000 to $2,623,075,000. In other words, while capital and surplus were increasing 22 per cent, deposits had increased 109 per cent.

To put it another way, in 1913 the ratio of capital to deposits was as 1 is to 5.45, whereas in 1920 it was as 1 is to 10.89; that is to say, the margin of safety to the depositors as represented by capital and surplus of national banks had decreased by 50 per cent.

In the same period the ratio of capital to loans and discounts decreased from 1 to 5.84 in 1913 to 1 to 9.95 in 1920. If capital had been maintained in the same ratio as deposits, additional loans to the amount of $16,868,911,000 could have been made by member banks in the Federal reserve system without increasing the ratio of loans and discounts to capital.

Of course, the expansion of loans which might be made possible by addition to banking capital of the country, is wholly theoretical. It would be limited by reserve requirements, which would probably greatly reduce its aggregate.

Digitized by Google

It is clear, however, that in many cases one of the factors which limited and restricted credit during the crisis through which we have just passed was the inadequate capital of banks, both generally and locally, and not the insufficiency of credit available at the Federal reserve banks.

It was the position of the Federal Reserve Board and most of the Federal reserve banks at least, that, in consideration of a change in policy upon the part of the board and the banks in the direction of lower discount rates, due regard must be had for the possible results of a change in policy. To be effective, such a policy must result in a more liberal attitude on the part of member banks in making loans. As banks lend more money while prices fall, the strain upon credit becomes more and more pronounced. The danger of bank failures, with resulting distress and embarrassment to the whole industrial and financial fabric of the country increases. The board and the Federal reserve banks were of the opinion that the possibility of bank failures resulting from a general invitation extended through a policy of lower discount rates to banks to increase their loans to customers was a very real menace in this period and that this menace would have been greatly increased by a discount policy sufficiently liberal to be effective in arresting the process of liquidation.

Notwithstanding the apprehensions of the Federal Reserve Board and Federal reserve banks regarding the possible results in a change in policy, the commission is of the opinion that a more liberal policy could have been adopted in the latter part of 1920 and the early part of 1921 and that the adoption of such a policy would have served to arrest in part the tide of deflation and to reduce the hardships and losses incident thereto.

Whatever may be said in support of the policy adopted by the Federal Reserve Board and the Federal reserve banks from the standpoint of its wisdom and necessity, in the light also of the psychological and economic factors which it was necessary to consider in determining it, it is evident that the application of the policy in the rural sections of the country resulted in great hardship and distress, and contributed to some results economically undesirable.

This hardship was due, in large measure, to the excessive costs of producing the 1920 crop, and to the slower turnover, which is an incident of farming operations, which made it impossible for the farmer to liquidate with the same degree of rapidity and the same degree of loss that was possible with the industries having quicker turnovers of stocks, which could be immediately put on the market. Pressure for the liquidation of loans resulting from the psychology of fear and timidity on the part of bankers generally, which accompanies periods of falling prices, compelled in many instances the sale of immature cattle and calves, which seems likely to result in a shortage of meat supply during the season of production immediately in prospect.

In the general pressure of the processes of liquidation sales were compelled where a wiser and more discriminating policy would have suggested carrying the borrower until a less disastrous sale could be effected.

The owner of goods is confronted with two alternatives in a declining market; he must sell his goods as fast as he can sell them, relying upon his ability to later purchase goods at lower prices, taking his

Digitized by Google

loss in small amounts at each turnover; or he must hold his goods until a better price is obtainable, running the risk of being compelled to sell when the price has reached bottom. The farmer's opportunity to make a choice between these two alternatives is largely diminished by the fact that farm products can not be normally withheld from the market for long periods, even if adequate credit for this purpose is available, and because a large carry over from one year to the next acts as a drag upon the prices for the new crop, and the loss which is avoided in the first place may become a greater loss in the second place.

The farmer's difficulties were undoubtedly increased during this period of pressure for liquidation by the fact that prices of commodities that he had to sell declined at a faster rate than the prices of the commodities that he was obliged to buy. If it had been possible to stop the decline in farm prices, without at the same time stopping the decline of prices of other commodities which were falling more slowly, the farmer's position would undoubtedly have been improved by a policy which would have accomplished this result. Had a change in policy resulted in arresting the decline in prices of other commodities without arresting the decline in farm prices, the farmer would have been worse off than he was.

During the period of the war the reserve ratio of Federal reserve banks was steadily declining, and with the exception of a slight rise in the early part of 1919 during the period of temporary deflation, continued to fall during 1919. By December it had reached 44.8 and by May, 1920, was down to 42.7. At this time the unadjusted ratio—that is, the ratio of the reserves to deposit and currency liabilities before adjustment of these ratios by borrowings from other reserve banks—had fallen far below 40 per cent in many of the reserve districts, particularly those in the South and West.

In many of the districts, notably in the Atlanta, Minneapolis, Kansas City, and Dallas districts, the unadjusted reserve ratio fell below 20 per cent at some time during the last half of 1920. At one time during 1920 seven of the Federal reserve banks were borrowing from the other five banks. Chart H on page 90 shows the course of the ratios of the 12 Federal reserve banks, and for the entire Federal reserve system, during the period from January, 1920, to July, 1921.

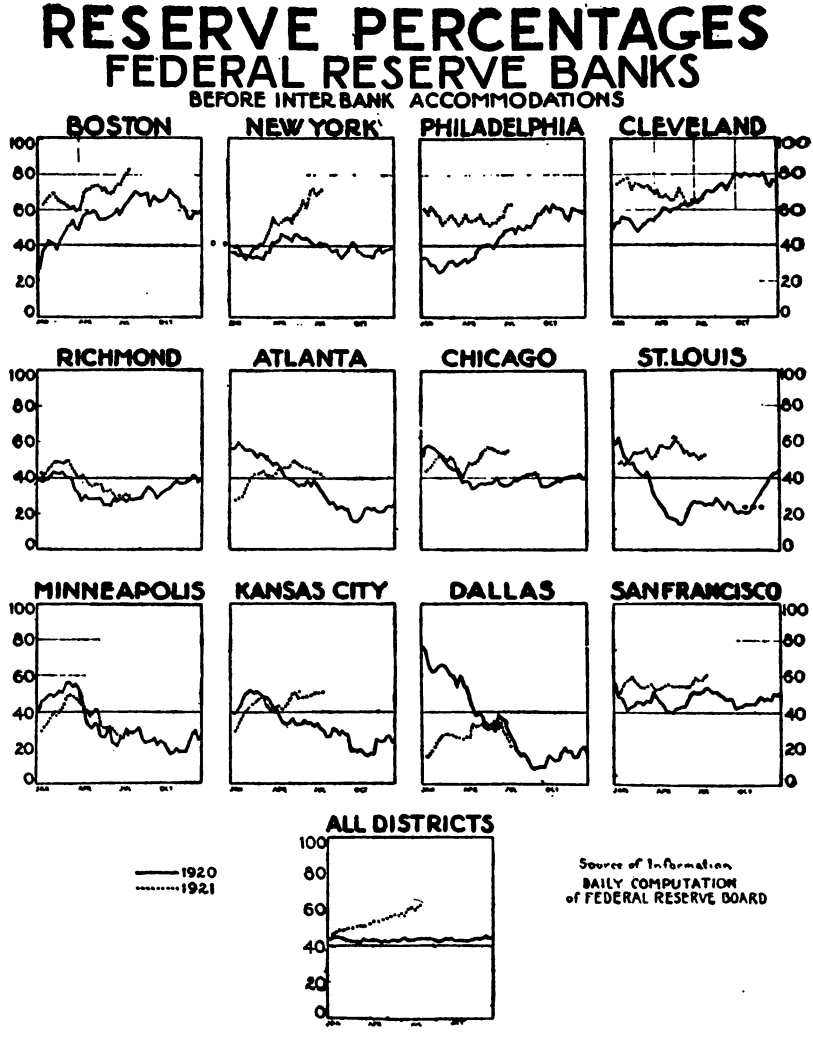
The Federal Reserve Board, under the provisions of the Federal reserve act, to which reference has been made on page 20 of Chapter 1 of this report could have suspended the reserve requirements, thus expanding the lending power of the Federal reserve system as a whole. The situation which would have resulted from this course, however, would have been an anomalous one. The purpose of reducing the reserve requirement under the economic and financial conditions existing in the latter part of 1920 must have been to permit a more liberal policy on the part of member banks in making loans to their customers. The effect of this policy would have been to increase the liabilities of the member banks to the Federal reserve banks.

On the other hand, the law requires that the banks shall pay a graduated tax of 1 per cent on the deficiency of reserve up to 32½ per cent, and increasingly in proportion to the deficiency of the reserve below 32½ per cent. The act further requires "that the reserve bank shall add an amount equal to the tax to the rates of

Digitized by Google

interest and discount fixed by the Federal Reserve Board." The purpose of the tax and the increase in the discount rates provided in the act is to cause a reduction in the borrowings of the member banks from the Federal reserve banks, which would bring the reserve ratio above the 40 per cent fixed by law.

CHART H.



A suspension of the reserve requirements under the circumstances and conditions existing in the latter half of 1920, therefore, would have put the Federal reserve banks in position of encouraging borrowings on the part of member banks on one hand and discouraging them on the other hand by increases in rediscount rates. In other words, it was not possible to suspend the reserve requirements without at the same time bringing pressure on the member banks to reduce their borrowings.

Digitized by Google

If the Federal Reserve Board had suspended the reserve requirements, it is clear that the law imposed upon it the duty to immediately take steps through increasing discount rates to reduce the borrowings of member banks, so as to bring the reserve ratio up to the legal requirements. Studies were made under the direction of the commission with a view of obtaining answers to the following questions:

1. Whether the expansion of bank loans in rural districts during the four or five years culminating with June, 1920, was more or less rapid than the increase of such loans in the financial and industrial centers.

2. Whether the action of the Federal Reserve Board during the 15 months preceding June 30, 1920, produced a greater curtailment of credit in the rural districts than in the financial and industrial sections.

3. Whether credit was absorbed from the rural communities and placed at the disposal of the financial centers for the purpose of speculative activities.

The first of these studies was made by Dr. David Friday, of the University of Michigan. The method of approaching the problem of this study and the conclusions reached as a result of it are as follows:

In order to arrive at an opinion upon these three questions, it was necessary, first of all, to set up the figures showing the rate of growth of loans and discounts of banks in the different communities and in the United States as a whole, and, second, to separate out of this material the loans and discounts which are properly chargeable to industrial and commercial activities, and those which are properly chargeable to agricultural activities. No statistics were available at the time of making this study which made such a separation. The common practice as to National banks was a grouping used by the Comptroller of the Currency and adopted by the Federal Reserve Board. This classification divided banks into groups as follows: Central reserve city banks, comprising New York, Chicago, and St. Louis; reserve city banks, which included the lesser commercial centers of the country; and country banks, which included all banks other than central reserve city banks and reserve city banks. As to the State banks, statistics were available for the most part in the form of combined totals for the State, and not, excepting in a few cases, grouped into city and country banks.

It was necessary, therefore, to arrive at conclusions for the most part by using the combined totals for State and National banks in each State, assuming that some light would be thrown upon the subject by an examination of the rate of growth of loans and discounts in States largely agricultural, as compared with States largely industrial and commercial.

Table 22, on page 92, shows the loans and discounts of all banks in each State as of June 30, 1914, 1916, 1918 and 1920, and by geographic groups. The different States vary widely in the rapidity with which the loans have increased, even in the same geographical division. It is desirable, therefore, to have the loans and discounts of all banks by States, as set forth in the table, which was taken from the annual reports of the Comptroller of the Currency.

Digitized by Google

TABLE 22.—*Loans and discounts of all banks in the United States on June 30 of each year.*

[000 omitted.]

State.	1914	1916	1918	1920	Increase, 1914–1920.
					Per cent.
New England States:					
Maine	$88,689	$94,506	$107,109	$140,415	58
New Hampshire	76,613	83,057	89,986	100,584	31
Vermont	98,485	108,394	114,229	126,530	28
Massachusetts	1,210,222	1,444,580	1,658,831	2,119,122	74
Rhode Island	130,884	140,636	145,051	192,326	47
Connecticut	263,661	296,510	340,530	410,757	56
Total	1,868,556	2,167,683	2,455,736	3,089,734	65
Eastern States:					
New York	3,696,700	4,796,273	5,887,545	7,529,704	104
New Jersey	381,105	405,433	494,329	582,511	53
Pennsylvania	1,295,825	1,426,018	1,689,251	2,293,345	77
Delaware	24,207	28,850	33,705	43,472	80
Maryland	178,577	203,396	250,773	346,314	92
District of Columbia	58,968	67,431	88,476	116,017	97
Total	5,635,382	6,927,401	8,444,079	10,911,363	94
Middle States:					
Ohio	690,644	802,488	1,024,735	1,464,557	112
Indiana	307,810	338,448	411,338	576,393	87
Illinois	1,105,952	1,304,291	1,530,880	2,368,814	114
Michigan	382,385	341,275	411,230	656,264	72
Wisconsin	286,974	321,551	409,180	607,744	112
Minnesota	369,246	455,676	583,815	841,807	128
Iowa	484,812	552,888	717,321	962,548	98
Missouri	530,871	578,906	756,433	1,055,453	99
Total	4,158,692	4,695,523	5,844,932	8,533,880	105
Southern States:					
Virginia	178,052	200,005	286,867	417,278	134
West Virginia	130,061	134,708	176,262	232,040	78
North Carolina	115,347	118,334	179,883	338,720	194
South Carolina	95,045	97,314	148,352	252,406	166
Georgia	179,426	181,855	257,637	399,505	122
Florida	66,531	68,343	84,623	137,393	107
Alabama	97,167	86,047	108,199	187,127	93
Mississippi	59,479	53,307	89,564	166,713	180
Louisiana	113,915	115,776	187,558	351,604	209
Texas	325,676	345,213	502,559	826,057	153
Arkansas	71,825	68,811	111,570	188,591	162
Kentucky	149,823	151,007	207,957	301,751	101
Tennessee	135,669	141,095	199,382	311,019	129
Total	1,718,020	1,766,815	2,540,413	4,110,294	139
Western States:					
North Dakota	82,591	109,202	146,922	196,295	138
South Dakota	79,728	95,843	159,413	242,782	204
Nebraska	187,224	234,450	351,627	455,963	143
Kansas	167,449	210,950	301,144	409,903	145
Montana	72,139	84,781	129,151	162,565	125
Wyoming	20,206	26,121	42,118	62,262	238
Colorado	94,517	110,734	159,458	223,419	136
New Mexico	20,181	26,536	39,638	51,769	156
Oklahoma	104,923	134,129	250,096	369,701	252
Total	838,959	1,032,746	1,579,567	2,180,659	163
Pacific States:					
Washington	136,201	151,226	209,336	295,377	117
Oregon	84,960	89,756	129,715	219,564	156
California	747,412	796,153	1,021,135	1,470,947	96
Idaho	30,844	39,393	65,556	107,212	248
Utah	53,856	66,464	84,968	107,626	100
Nevada	12,725	14,066	18,626	25,351	99
Arizona	22,590	26,916	38,843	62,947	179
Alaska	2,392	2,517	4,275	4,102	71
Total	1,090,981	1,186,491	1,572,454	2,293,126	110
Total United States	15,300,589	17,776,659	22,437,181	31,119,056	103

Digitized by Google

Following this table is another table, drawn from the first one, which shows the ratio of increase of loans and discounts in all banks of each State, on the basis of 1914 as 100, for the years 1916, 1918, and 1920. It will be noted that the rate of increase in the various geographic groups from 1914 to 1918 was fairly uniform. With the exception of the Western States group, the increases varied from 31 per cent in the New England group to 55 per cent in the Southern States group. The largest increase was in the Western States group, where it was 91 per cent.

The percentage of increase has been various, not only for the period taken as a whole, but for the different sections in different portions of the six years, 1914 to 1920. Thus of the 104 per cent increase for the State of New York, 30 per cent occurred between 1914 and 1916; the total increase for the Southern States was 139 per cent, of which only 3 per cent occurred between 1914 and 1916. By 1918 New York had increased 59 per cent over 1914 and the Southern States 55 per cent. Between 1918 and 1920 New York went up 45 points, while the Southern States rose 84 points. The following Table 23 shows the percentages of increase for the different periods, by States:

TABLE 23.—*Loans and discounts of all banks in the United States—Ratio of 1916, 1918, and 1920 to 1914.*

State.	1914	1916	1918	1920
New England States:	P. ct.	P. ct.	P. ct.	P. ct.
Maine	100	107	121	158
New Hampshire	100	108	118	131
Vermont	100	110	116	128
Massachusetts	100	119	137	174
Rhode Island	100	107	111	147
Connecticut	100	112	129	156
Total	100	116	131	165
Eastern States:				
New York	100	130	159	204
New Jersey	100	106	130	153
Pennsylvania	100	110	130	177
Delaware	100	119	139	180
Maryland	100	114	140	192
District of Columbia	100	114	150	197
Total	100	123	150	194
Middle States:				
Ohio	100	116	148	212
Indiana	100	110	134	187
Illinois	100	118	138	214
Michigan	100	89	108	172
Wisconsin	100	112	143	212
Minnesota	100	123	158	228
Iowa	100	114	148	198
Missouri	100	109	143	199
Total	100	113	141	205
Southern States:				
Virginia	100	112	161	234
West Virginia	100	104	136	178
North Carolina	100	108	156	204
South Carolina	100	102	156	266
Georgia	100	101	144	222

State.	1914	1916	1918	1920
Southern States—Contd.	P. ct.	P. ct.	P. ct.	P. ct.
Florida	100	103	127	207
Alabama	100	89	111	193
Mississippi	100	113	151	280
Louisiana	100	102	165	309
Texas	100	106	154	253
Arkansas	100	96	155	262
Kentucky	100	101	139	201
Tennessee	100	104	147	229
Total	100	103	155	239
Western States:				
North Dakota	100	132	178	238
South Dakota	100	120	200	304
Nebraska	100	125	188	243
Kansas	100	126	180	245
Montana	100	118	179	225
Wyoming	100	129	208	338
Colorado	100	117	169	236
New Mexico	100	131	196	256
Oklahoma	100	128	238	352
Total	100	125	191	263
Pacific States:				
Washington	100	111	154	217
Oregon	100	106	153	256
California	100	107	137	196
Idaho	100	128	213	348
Utah	100	123	158	200
Nevada	100	111	146	199
Arizona	100	119	172	279
Alaska	100	105	179	171
Total	100	109	144	210
Total United States	100	116	147	203

In the following two-year period the cumulative increase expressed in the ratio of 1920 to 1914, however, shows very wide variations in the different States, and in the different groups of States, running from 65 per cent in the New England States group to 163 per cent in

Digitized by Google

the Western States group, and 103 per cent for the United States as a whole. The States which showed an increase in loans and discounts in excess of the average for the entire country, of 103 per cent, with the percentage of increase are as follows:

	Per cent.		Per cent.
New York	104	Tennessee	129
Ohio	112	North Dakota	138
Wisconsin	112	South Dakota	204
Illinois	114	Nebraska	143
Minnesota	128	Kansas	145
Virginia	134	Montana	125
North Carolina	194	Wyoming	238
South Carolina	166	Colorado	136
Georgia	122	New Mexico	156
Florida	107	Oklahoma	252
Mississippi	180	Washington	117
Louisiana	209	Oregon	156
Texas	153	Idaho	248
Arkansas	162	Arizona	179

It was recognized, of course, that statistics showing loans and discounts by States would not necessarily be conclusive, for all of the States contain numbers of banks in the larger cities of such States the business of which is largely commercial.

In order to get at somewhat more definitely the relative rate and growth and decline of loans in agricultural States, as compared with industrial States, a table was prepared giving figures of loans and discounts for June, 1914, June, 1920, and April, 1921, with the per cent of increase from 1914 to 1920, and the per cent of decrease from June 30, 1920, to April 28, 1921. In compiling this table the loans and discounts of state and national banks in the large cities in each State were excluded. (See Table 24.)

For further purposes of comparison, another table was prepared, showing the loans and discounts of all banks in Chicago, New Orleans, St. Paul and Minneapolis, St. Louis, Kansas City and St. Joseph, and Richmond, and showing all banks outside of these cities in each State separately. (See Table 25, page 95.)

TABLE 24.—*Loans and discounts of State and national banks in various States.*

[000 omitted.]

State.	June, 1914.	June, 1920.	April, 1921.	Per cent increase, 1914–1920.	Per cent decrease, 1920–1921.
Illinois (excluding Chicago)	$365,474	$675,977	$729,015	84.9	[1] 8.1
Iowa	461,119	921,451	890,072	91.5	3.4
Kansas	166,461	402,091	378,284	141.5	5.9
Louisiana (excluding New Orleans)	82,773	153,886	144,853	192.0	6.0
Minnesota (excluding St. Paul and Minneapolis)	223,951	508,111	486,474	124.5	3.3
Missouri (excluding St. Louis, Kansas City, and St. Joseph)	188,380	359,792	345,182	91.0	1.6
Montana	71,076	155,389	142,596	118.6	8.2
Nebraska	186,329	419,322	383,283	125.0	8.6
South Dakota	79,231	235,186	215,356	196.8	8.4
Tennessee	134,635	298,157	285,177	121.4	4.3
Texas	317,752	771,595	784,115	142.8	[1] 1.6
Wyoming	19,942	65,575	62,509	228.8	4.6
Virginia	177,798	386,656	400,770	117.0	[1] 3.6
Total	2,464,923	5,348,078	5,247,685	117.0	1.9

[1] Increase.

Digitized by Google

TABLE 25.—*Comparison of loans and discounts in certain city and country banks.*

[000 omitted.]

Location.	1914	1920	1921	Per cent increase, 1914–1920.	Per cent decrease, 1920–21.
City banks:					
Chicago	$709,662	$1,399,201	$1,497,392	97	[1] 7
New Orleans	59,423	180,825	166,161	204	8
St. Paul and Minneapolis	144,356	266,261	263,343	84	1
St. Louis, Kansas City, and St. Joseph	340,379	667,347	585,462	96	12
Richmond (nationals)	36,406	72,016	77,836	98	[1] 8
Total	1,290,226	2,585,650	2,590,134	100	.....
Country banks:					
Illinois	365,474	675,977	729,015	85	[1] 8
Louisiana	52,773	153,886	144,853	191	6
Minnesota	223,951	503,111	486,474	116	3
Missouri	188,380	359,792	345,182	91	4
Virginia (nationals)	74,990	165,668	179,478	121	[1] 8
Total	905,568	1,858,434	1,885,002	105	[1] 1.5

[1] Increase.

It will be noted from this table that the increase and decrease of loans and discounts of city banks as compared with country banks, followed each other with comparative closeness.

It was recognized that while this table gives a fairly accurate picture of the situation, that it was far from giving a true picture of the movement of bank loans in the purely agricultural districts; and an attempt was made to secure figures which would be typical of the movement of loans and discounts in purely agricultural counties. With this end in view, the figures of loans and discounts for 10 counties in each of 5 States, with the percentage of increase from June 30, 1914, to June 30, 1920, was compiled. The table is as follows:

TABLE 26.—*Loans and discounts of all banks in 10 agricultural counties of each of 4 States.*

State.	1914	1920	Per cent increase, 1914–1920.
Illinois	$39,443,272	$80,123,918	103
Michigan	17,777,969	53,938,525	203
Minnesota	18,185,841	44,051,339	142
Nebraska	16,573,425	42,937,390	159
Texas	37,013,518	84,124,250	127
	128,994,025	305,175,422	147

A comparison of the percentages of increase for the 10 agricultural counties in Illinois, Michigan, Minnesota, Nebraska, and Texas with the percentages of increase in these States as a whole showed that in Michigan, Minnesota, and Nebraska the rate of increase was greater in the agricultural counties; while in the States of Illinois and Texas the rate of increase was less in the agricultural counties than in the State as a whole.

Digitized by Google

An attempt was made by the Department of Agriculture in 1918 and again in 1920 to obtain figures which would show the proportion of the total loans and discounts of all banks which went to agriculture, either in the form of mortgage loans or in the form of short-time loans.

The method of tabulating and computing the figures secured by the questionnaire is indicated in the footnote.[1] The same process was followed in tabulating and computing the estimated farm-mortgage loans and personal and collateral loans in 1918.

In Table 27, page 97, the commission has thrown the two tables of the Department of Agriculture of 1918 and 1920 together, so as to indicate the relation between the proportion of total loans and discounts in 1918, and the farm-mortgage loans and short-time farm loans, to the total loans and discounts in 1920.

---

[1] Table gives estimated total loans to farmers by banks July 1, 1918, and December 31, 1920, farm-mortgage loans and personal and collateral loans being shown separately. The total loans and discounts of all banks as reported by the comptroller is shown in a parallel column, and the percentages of such total loans represented by farm-mortgage loans and farmers' personal loans, respectively, are also shown.

In computing the estimates for total farm-mortgage loans, for example, on the basis of the reported figures, together with those given by the Comptroller of the Currency for total loans and discounts, it was assumed, first, that in the case of each State the percentage obtained by dividing the total loans and discounts of all banks, other than national, which replied to our questionnaire into the total loans and discounts of such of these banks as reported a mixed urban and farm business applied also to the loans and discounts of banks of the same class which did not reply to our questionnaire. Secondly, it was assumed that the percentage of loans and discounts represented by farm-mortgage loans in the case of banks other than national reporting a mixed urban and farm business held also for the part of the loans and discounts not reported, but which, according to the first calculation, were composed of such mixed loans. For instance, in the State of Missouri the total loans reported by banks other than national were $172,370,019, and the loans reported by banks whose loans, in part, represented farm-mortgage loans were $119,772,263, or 65.9 per cent of the total. Further, of the loans reported by the banks whose loans were, in part, farm-mortgage loans $21,683,921, or 18.1 per cent, were farm-mortgage loans. Applying the first of these percentages, namely, 69.5, to the total amount of loans and discounts of banks other than national, reported for the State by the Comptroller of the Currency, namely, $587,691,000, gives a total of $40,844,525, representing, in part, farm-mortgage loans, and applying the second percentage, or 18.1, to the last-named sum, gives a total of $73,989,362 mortgage loans.

A similar computation was then made of the farm-mortgage loans held by national banks and the resulting figures added to those obtained for banks other than national, giving a total of farm-mortgage loans held by all banks in Missouri, amounting to $75,093,027.

Estimates of total personal and collateral loans to farmers by all banks in the United States were arrived at by a process exactly parallel to the one described for farm-mortgage loans.

Digitized by Google

TABLE 27.—*Estimated amount of bank loans to farmers in the United States outstanding on July 1, 1918, and Dec. 31, 1920, with total loans and discounts for comparison.*

Geographic division and State.	Total loans of all banks July 1, 1918.[1]	Total loans of all banks Dec. 31, 1920.[1]	Farm mortgage loans.				Personal and collateral loans to farmers.			
			Estimated amount July 1, 1918.[2]	Estimated amount Dec. 31, 1920.[3]	Per cent of total loans July 1, 1918.	Per cent of total loans Dec. 31, 1920.	Estimated amount July 1, 1918.[2]	Estimated amount Dec. 31, 1920.[3]	Per cent of total loans July 1, 1918.	Per cent of total loans Dec. 31, 1920.
United States	$22,432,906,000	$29,123,378,000	$1,010,559,000	$1,447,482,926	4.50	4.97	$2,506,814,000	$3,869,891,415	11.17	13.29
New England	2,455,736,000	2,932,136,000	96,300,000	93,685,241	3.92	3.20	17,618,000	26,941,166	.72	.92
Middle Atlantic	8,071,125,000	9,735,087,000	58,787,000	34,148,394	.73	.35	74,912,000	106,806,377	.93	1.10
East North Central	3,787,368,000	5,301,650,000	252,707,000	335,095,006	6.67	6.32	434,843,000	656,326,611	11.48	12.38
West North Central	3,016,675,000	3,833,497,000	296,538,000	531,212,143	9.83	13.86	1,084,037,000	1,562,987,613	35.93	40.77
South Atlantic	1,505,578,000	2,184,681,000	53,129,000	94,048,174	3.53	4.30	183,759,000	313,184,956	12.20	14.34
East South Central	605,102,000	933,019,000	52,023,000	101,079,609	8.60	10.83	108,635,000	185,981,673	17.95	19.93
West South Central	1,051,783,000	1,591,037,000	34,503,000	73,251,166	3.28	4.60	302,536,000	541,988,607	28.76	34.07
Mountain	578,358,000	752,978,000	27,621,000	55,935,755	4.78	7.43	180,460,000	268,160,368	31.20	35.61
Pacific	1,360,186,000	1,859,293,000	138,951,000	129,027,438	10.22	6.94	120,014,000	207,514,044	8.82	11.16
New England:										
Maine	107,109,000	138,814,000	5,452,000	5,405,659	5.09	3.89	3,460,000	6,515,518	3.23	4.69
New Hampshire	89,986,000	99,413,000	16,125,000	8,858,905	17.92	8.91	1,674,000	1,949,027	1.86	1.96
Vermont	114,229,000	126,379,000	52,031,000	65,308,569	45.55	51.68	6,877,000	12,493,623	6.02	9.89
Massachusetts	1,658,831,000	1,975,748,000	14,432,000	7,127,530	.87	.36	2,820,000	3,270,017	.17	.17
Rhode Island	145,051,000	190,744,000	3,220,000	333,305	2.22	.17	131,000	188,089	.09	.10
Connecticut	340,530,000	401,038,000	5,040,000	6,651,273	1.48	1.66	2,656,000	2,524,892	.78	.63
Middle Atlantic:										
New York	5,887,545,000	6,965,992,000	25,905,000	24,017,597	.44	.34	38,269,000	52,002,471	.65	.75
New Jersey	494,329,000	571,184,000	1,631,000	1,035,386	.33	.18	8,601,000	16,369,101	1.74	2.87
Pennsylvania	1,689,251,000	2,197,911,000	31,251,000	9,095,411	1.85	.41	28,042,000	38,434,905	1.66	1.75
East North Central:										
Ohio	1,024,735,000	1,429,847,000	39,247,000	51,924,862	3.83	3.63	65,173,000	106,983,846	6.36	7.48
Indiana	411,338,000	551,554,000	60,796,000	78,920,443	14.78	14.31	97,857,000	127,910,904	23.79	23.19
Illinois	1,530,880,000	2,129,285,000	66,440,000	105,960,642	4.34	4.98	167,019,000	253,967,783	10.91	11.93
Michigan	411,230,000	630,172,000	34,790,000	32,618,757	8.46	5.18	33,515,000	50,630,088	8.15	8.03
Wisconsin	409,180,000	560,792,000	51,434,000	65,670,302	12.57	11.71	71,279,000	116,833,990	17.42	20.83
West North Central:										
Minnesota	583,815,000	761,441,000	89,090,000	124,859,546	15.26	16.40	192,017,000	235,078,342	32.89	30.87
Iowa	717,321,000	897,098,000	114,413,000	213,325,000	15.95	23.78	284,633,000	400,816,955	39.68	44.68
Missouri	756,433,000	945,688,000	35,779,000	75,093,027	4.73	7.94	113,616,000	211,059,938	15.02	22.32
North Dakota	146,922,000	190,040,000	14,560,000	27,086,233	9.91	14.25	74,313,000	118,920,813	50.58	62.58

[1] From report of Comptroller of the Currency.

[2] Based on returns from 18,053 banks for farm mortgages and 17,465 banks for short-time farm loans, out of a total of 28,819 banks, as shown in the report of the Comptroller of the Currency for July 1, 1918.

[3] Based on returns from 13,540 banks, out of a total of 30,178 banks, as shown in reports of the Comptroller of the Currency for the nearest date.

Digitized by Google

TABLE 27.—*Estimated amount of bank loans to farmers in the United States outstanding on July 1, 1918, and Dec. 31, 1920, with total loans and discounts for comparison*—Continued.

Geographic division and State.	Total loans of all banks July 1, 1918.	Total loans of all banks Dec. 31, 1920.	Farm mortgage loans.				Personal and collateral loans to farmers.			
			Estimated amount July 1, 1918.	Estimated amount Dec. 31, 1920.	Per cent of total loans July 1, 1918.	Per cent of total loans Dec. 31, 1920.	Estimated amount July 1, 1918.	Estimated amount Dec. 31, 1920.	Per cent of total loans July 1, 1918.	Per cent of total loans Dec. 31, 1920.
West North Central—Continued.										
South Dakota	$159,413,000	$226,989,000	$8,672,000	$22,086,090	5.44	9.73	$90,786,000	$154,311,092	56.95	67.98
Nebraska	351,627,000	415,364,000	18,425,000	35,312,260	5.24	8.50	160,483,000	204,389,176	45.64	49.21
Kansas	301,144,000	396,877,000	15,599,000	33,449,987	5.18	8.43	168,189,000	238,411,297	55.85	60.07
South Atlantic:										
Delaware	33,705,000	43,558,000	900,000	2,032,290	2.67	4.67	1,314,000	3,438,537	3.90	7.89
Maryland	250,773,000	328,767,000	7,924,000	5,553,909	3.16	1.69	14,806,000	17,913,727	5.94	5.45
District of Columbia	88,476,000	115,970,000	159,000	1,175,189	.18	1.01	27,000	537,820	.03	.46
Virginia	286,867,000	394,539,000	10,671,000	13,505,099	3.72	3.42	37,809,000	52,701,208	13.18	13.36
West Virginia	176,262,000	243,301,000	2,362,000	4,349,929	1.34	1.79	13,096,000	15,663,408	7.43	6.44
North Carolina	179,883,000	317,173,000	9,246,000	24,651,385	5.14	7.77	23,007,000	61,026,032	12.79	19.24
South Carolina	148,352,000	233,044,000	9,094,000	17,194,252	6.13	7.38	44,016,000	67,413,772	29.42	28.93
Georgia	257,637,000	374,187,000	8,940,000	21,243,390	3.47	5.68	43,645,000	83,986,661	16.91	22.45
Florida	84,623,000	134,142,000	3,833,000	4,342,151	4.53	3.24	5,949,000	10,508,791	7.03	7.83
East South Central:										
Kentucky	207,957,000	295,620,000	21,607,000	25,883,448	10.39	8.76	49,723,000	61,201,963	23.91	20.70
Tennessee	199,382,000	293,591,000	9,112,000	19,338,597	4.57	6.59	28,193,000	45,725,307	14.14	15.57
Alabama	108,199,000	180,015,000	6,427,000	12,602,232	5.94	7.00	16,998,000	40,424,370	15.71	22.46
Mississippi	89,564,000	163,793,000	14,877,000	43,255,332	16.61	26.41	13,721,000	38,630,033	15.32	23.58
West South Central:										
Arkansas	111,570,000	181,059,000	9,216,000	22,209,021	8.26	12.27	32,679,000	72,124,936	29.29	39.84
Louisiana	187,558,000	326,400,000	7,258,000	26,733,164	3.87	8.19	21,025,000	69,753,012	11.21	21.37
Oklahoma	250,096,000	337,299,000	2,801,000	8,712,857	1.12	2.58	103,190,000	147,924,291	41.26	43.86
Texas	502,559,000	746,279,000	15,228,000	15,596,124	3.03	2.09	145,642,000	252,176,368	28.98	33.79
Mountain:										
Montana	129,151,000	154,279,000	9,815,000	19,284,397	7.60	12.50	50,317,000	73,618,242	38.96	47.72
Idaho	65,556,000	93,453,000	3,101,000	6,044,698	4.73	6.47	30,956,000	44,513,900	47.22	47.62
Wyoming	42,118,000	63,911,000	2,632,000	7,079,050	6.25	11.08	15,205,000	26,360,048	36.10	41.29
Colorado	159,458,000	211,623,000	3,524,000	6,068,509	2.21	2.87	51,409,000	66,317,753	32.24	31.34
New Mexico	39,638,000	46,005,000	975,000	1,221,505	2.46	2.66	8,007,000	16,052,302	20.20	34.89
Arizona	38,843,000	59,776,000	1,736,000	3,441,957	4.47	5.76	10,655,000	20,032,210	27.43	33.51
Utah	84,968,000	99,252,000	3,756,000	9,871,436	4.42	9.95	11,318,000	14,727,010	13.32	14.84
Nevada	18,626,000	24,848,000	2,082,000	2,994,203	11.18	11.77	2,893,000	6,508,903	13.92	26.19
Pacific:										
Washington	209,336,000	278,160,000	8,897,000	9,282,492	4.25	3.34	37,701,000	48,427,865	18.01	14.41
Oregon	129,715,000	195,833,000	4,761,000	5,424,009	3.67	2.77	22,168,000	39,904,738	17.09	20.38
California	1,021,135,000	1,385,300,000	125,208,000	114,320,937	12 27	8.25	60,145,000	119,181,441	5.89	8.60

Digitized by Google

In general, Table 27, page 97, shows that the proportion of farm mortgage loans to the total loans of all banks increased from June 30, 1918, to December 31, 1920, from 4.50 per cent to 4.97 per cent, and the proportion of personal and collateral loans to farmers to total of all loans increased in the same period from 11.17 per cent to 13.29 per cent.

The proportion of short-time farm loans increased in all the geographic districts, and the proportion of farm mortgage loans increased in all districts except the New England States group, the Middle Atlantic States group, the East North Central group, and the Pacific States group.

The proportion of short-time farm loans to total loans increased in all of the States except Indiana, Michigan, Minnesota, Maryland, South Carolina, Kentucky, Colorado, and Washington, and in these States the decrease was very slight.

A comparison of the increase from July 1, 1918, to December 31, 1920, of all loans and discounts to farmers, with total loans and discounts of all banks from July 1, 1918, to June 30, 1920, in the States and geographic groups, is obtained by combining the table of the Department of Agriculture, page 97, with the table in Dr. Friday's study, on page 92, as shown in Table 28.

TABLE 28.—*Comparison of per cent of increase of farm mortgage and short-time loans, and per cent of increase of all loans and discounts, 1918–1920.*

Geographic divisions and States.	Total farm mortgages and short-time loans, 1918. (000 omitted.)	Total farm mortgages and short-time loans, 1920. (000 omitted.)	Per cent of increase of farm mortgage and short-time loans, 1918–1920, Department of Agriculture figures.	Per cent of increase of total loans and discounts of all banks, 1918–1920, Dr. David Friday's figures.	Loans and discounts of all banks in United States, 1918. (000 omitted.)	Loans and discounts of all banks in United States, 1920. (000 omitted.)
United States	$3,517,373	$5,317,374	51.1	38.6	$22,437,181	$31,119,056
New England	113,918	120,626	5.8	25.8	2,455,736	3,089,734
Middle Atlantic	133,699	140,954	5.4	28.9	8,071,125	10,405,560
East North Central	687,550	991,421	44.1	49.8	3,787,363	5,673,772
West North Central	1,380,575	2,094,199	51.6	32.3	3,145,826	4,164,751
South Atlantic	236,888	407,233	71.9	51.5	1,506,578	2,283,145
East South Central	160,658	287,061	78.6	59.7	605,102	966,610
West South Central	337,039	615,239	82.5	65.0	1,051,783	1,736,043
Mountain	208,081	324,096	55.7	35.7	512,802	695,939
Pacific	258,965	336,541	29.9	57.5	1,260,186	1,985,888
New England:						
Maine	8,912	11,921	33.7	31.0	107,109	140,415
New Hampshire	17,799	10,807	−39.2	11.7	89,986	100,584
Vermont	58,908	77,802	32.0	10.7	114,229	126,530
Massachusetts	17,252	10,397	−39.7	27.7	1,658,831	2,119,122
Rhode Island	3,351	521	−84.4	32.5	145,051	192,326
Connecticut	7,696	9,176	19.2	20.6	340,530	410,757
Middle Atlantic:						
New York	64,174	76,020	18.4	27.8	5,887,545	7,529,704
New Jersey	10,232	17,404	70.0	17.8	494,329	582,511
Pennsylvania	59,293	47,530	−19.8	73.6	1,689,251	2,293,345
East North Central:						
Ohio	104,420	158,908	52.1	42.9	1,024,735	1,464,557
Indiana	158,653	206,831	30.3	40.1	411,338	576,393
Illinois	233,459	359,928	54.1	54.7	1,530,880	2,368,814
Michigan	68,305	83,248	21.8	59.5	411,230	656,264
Wisconsin	122,713	182,504	48.7	48.5	409,180	607,744
West North Central:						
Minnesota	281,107	359,937	28.0	44.1	583,815	841,807
Iowa	399,046	614,141	53.9	34.1	717,321	962,548
Missouri	149,395	286,152	91.5	38.0	756,433	1,055,453
North Dakota	88,873	146,007	64.2	33.6	146,922	196,295

Digitized by Google

TABLE 28.—*Comparison of per cent of increase of farm mortgage and short-time loans, and per cent of increase of all loans and discounts, 1918–1920*—Continued.

Geographic divisions and States.	Total farm mortgages and short-time loans. 1918. (000 omitted.)	Total farm mortgages and short-time loans, 1920. (000 omitted.)	Per cent of increase of farm mortgage and short-time loans, 1918–1920, Department of Agriculture figures.	Per cent of increase of total loans and discounts of all banks, 1918–1920, Dr. David Friday's figures.	Loans and discounts of all banks in United States, 1918. (000 omitted.)	Loans and discounts of all banks in United States, 1920. (000 omitted.)
West North Central—Contd.						
South Dakota	$99,458	$176,397	77.3	52.2	$159,413	$242,782
Nebraska	178,908	239,701	33.9	29.6	351,627	455,963
Kansas	183,788	271,861	47.9	36.1	301,144	409,903
South Atlantic:						
Delaware	2,214	5,470	147.1	28.9	33,705	43,472
Maryland	22,820	23,467	2.8	38.0	250,773	346,314
District of Columbia	186	1,713	820.9	31.1	88,476	116,017
Virginia	48,480	66,206	36.5	45.4	286,867	417,278
West Virginia	15,458	20,013	29.4	31.6	176,262	232,040
North Carolina	32,253	85,677	165.6	88.3	179,893	338,720
South Carolina	53,110	84,608	59.3	70.1	148,352	252,406
Georgia	52,585	105,230	100.1	55.0	257,637	399,505
Florida	9,782	14,845	51.7	62.3	84,623	137,393
East South Central:						
Kentucky	71,330	87,085	22.0	45.1	207,957	301,751
Tennessee	37,305	65,063	74.4	55.9	199,382	311,019
Alabama	23,425	53,026	126.3	72.9	108,199	187,127
Mississippi	28,598	81,885	186.3	86.1	89,564	166,713
West South Central:						
Arkansas	41,995	94,343	125.1	69.0	111,570	188,591
Louisiana	28,283	96,486	241.1	87.5	187,558	351,694
Oklahoma	105,991	156,637	47.1	47.8	250,096	369,701
Texas	160,870	267,772	66.4	64.3	502,559	826,057
Mountain:						
Montana	60,132	92,902	54.4	25.8	129,151	162,565
Idaho	34,057	50,558	48.4	63.5	65,556	107,212
Wyoming	17,837	33,469	87.6	47.8	42,118	62,282
Colorado	54,933	72,386	31.7	40.1	159,456	223,419
New Mexico	8,982	17,273	92.3	30.6	39,638	51,769
Arizona	12,391	23,474	89.4	62.0	38,843	62,947
Utah	15,074	24,598	63.1	26.6	84,968	107,625
Nevada	4,675	9,433	101.7	36.1	18,626	25,351
Pacific:						
Washington	46,598	57,710	23.8	41.1	209,336	295,377
Oregon	26,929	45,328	68.3	69.2	129,715	219,564
California	185,438	233,502	25.9	44.0	1,021,135	1,470,947

In general this table shows that the increase in farm mortgage and short-time loans to farmers, in the agricultural States particularly, in the period 1918 to 1920, was greater than the increase in total loans and discounts during the same period. In making comparisons, however, due allowance must be made for the fact, first, that the tables are not strictly comparable, for the reason that the figures for mortgage and short-time loans to farmers represent a constructive estimate, based upon approximately one-half of all the banks in 1918 and one-third the banks in 1920, and do not purport to be the actual figures; further, that the two tables from which the figures are taken do not cover identically the same period, farm mortgage loans and short-time loans to farmers covering the period from July 1, 1918, to December 31, 1920, while the figures for loans and discounts of all banks covered the period from June 30, 1918, to June 30, 1920.

The table is submitted not for the purpose of affording individual comparisons as between States but solely for the purpose of supporting, in a general way, the conclusions indicated by both tables, viz, that in general the expansion in the agricultural States during

Digitized by Google

the period of inflation was at least as great, if not greater, than in the industrial States.

It should be borne in mind that the commission presents the foregoing study as indicative, rather than conclusive, upon the questions to which it was directed. A comparison of loans and discounts in banks of agricultural States with loans and discounts of banks in industrial States must be indicative only, because loans for both industrial and commercial purposes are included in the totals for each State. The separations which it was possible to make on figures available of loans and discounts of banks in industrial centers and loans and discounts in country districts are not sufficiently complete and comprehensive to be entirely conclusive. The county figures are not sufficiently comprehensive to be conclusive.

Again, the figures submitted in this study cover in a comprehensive way only the period of inflation ending with June 30, 1920, and do not cover the figures for the period of deflation during the latter half of 1920 and the early part of 1921.

In an effort to get at the movement of loans and discounts in agricultural as compared with industrial communities and the relative degree of inflation, and in order to afford a more accurate basis of comparison of deflation in agricultural and industrial communities, the commission undertook a further study in cooperation with the Federal Reserve Board and the Federal Reserve Bank of New York. The methods employed and the conclusion reached as a result of this study are given in the following report:

The following tables give an analysis of reports to the Comptroller of the Currency and the Federal Reserve Board from about 9,500 banks throughout the country which are members of the Federal reserve system. The purpose of the analysis was to ascertain what changes took place during the year ended April 28, 1921, in the loans of banks in agricultural communities as compared with the loans of banks in nonagricultural communities. While loans by country banks are often made for uses other than to finance farmers, and many loans by city banks are made to move crops and for other purposes intimately connected with agriculture, it is felt that the figures compare with fair accuracy the liquidation of industrial and agricultural loans.

All counties in the country were grouped in three classes—agricultural, semiagricultural and nonagricultural. Counties were classified as agricultural when the value of their products according to data obtained from the 1920 census reports, the Geological Survey, the Bureau of Soils, and all other available sources was estimated to be not less than 80 per cent agricultural; as semiagricultural when their products were between 50 and 80 per cent agricultural; and as nonagricultural, when their products were less than 50 per cent agricultural.

The summary table 29, on page 102, shows that between May 4, 1920, and April 28, 1921, the loans and discounts of banks in agricultural counties throughout the country declined $36,500,000, or slightly more than 1.2 per cent; the loans and discounts of banks in semiagricultural counties declined $18,700,000, or 1.3 per cent; and the loans and discounts of banks in nonagricultural counties declined $827,100,000, or 5.6 per cent. The borrowings from the Federal reserve banks by banks in agricultural counties increased $127,600,000, or 56.6 per cent; borrowings by banks in semiagricultural counties remained practically stationary; and borrowings by banks in nonagricultural counties declined $629,100,000, or 28.5 per cent.

Digitized by Google

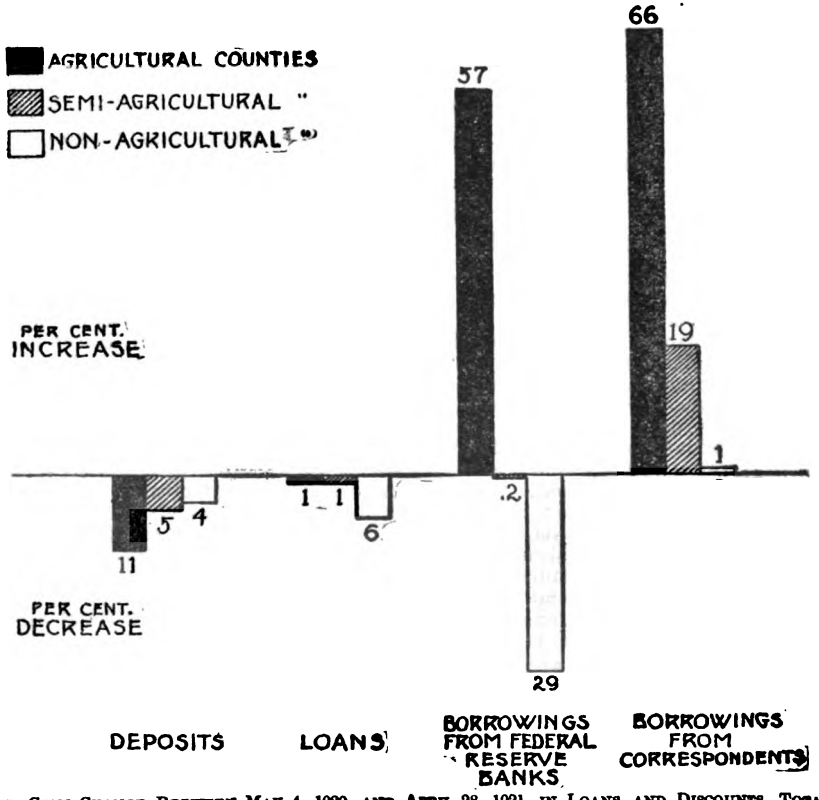
TABLE 29.—*Increase or decrease in loans, borrowings,[1] and deposits of member banks, 1920–21.*

[Amounts in millions of dollars.]

	Agricultural counties.		Semiagricultural counties.		Nonagricultural counties.		Total.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Loans and discounts	− 36.5	− 1.2	−18.7	− 1.3	−827.1	− 5.6	− 882.3	− 4.5
Borrowings from Federal reserve banks	+127.6	+56.6	− 0.3	− 0.2	−629.1	−28.5	− 501.8	−19.5
Borrowings from other banks	+ 45.2	+65.7	+ 6.1	+19.0	+ 0.5	+ 0.6	+ 51.8	+27.3
Total deposits	−411.8	−11.1	−87.7	− 5.2	−665.7	− 4.4	−1,165.2	− 5.7

[1] Bills payable and rediscounts.

CHART I.—AGRICULTURAL AND INDUSTRIAL LIQUIDATION MAY 4, 1920, TO APRIL 28, 1921.



PER CENT CHANGE BETWEEN MAY 4, 1920, AND APRIL 28, 1921, IN LOANS AND DISCOUNTS, TOTAL DEPOSITS, AND BORROWINGS OF MEMBER BANKS IN AGRICULTURAL, SEMIAGRICULTURAL, AND NONAGRICULTURAL COUNTIES.

Columns above the line show increases and columns below the line decreases.

Source of information: Reports of condition of national banks to the Comptroller of the Currency, and reports of member State banks and trust companies to the Federal Reserve Board.

In partial explanation of the relatively heavy demand upon the Federal reserve system by banks in agricultural counties, it appears that their loss in total deposits was 11.1 per cent, as against a loss of 4.4 per cent by banks in nonagricultural counties.

Between May 4, 1920, and April 28, 1921, member banks show a total liquidation of loans amounting to $882,000,000, of which $827,000,000, or 94 per cent, is shown by banks in nonagricultural counties, while the liquidation in agricultural and

Digitized by Google

semiagricultural counties amounted to only about $55,000,000. An analysis of the changes in loans by Federal reserve districts shows few important reductions for banks in agricultural counties, the largest reduction being reported for banks in the Kansas City district, where loans were reduced by about $53,000,000. On the other hand, banks in the Richmond and Atlanta districts showed somewhat larger loans this year than a year ago. In the semiagricultural counties no important changes are reported for any of the Federal reserve districts. In the nonagricultural counties the volume of liquidation has been material in every Federal reserve district, except Cleveland, which reports a 10 per cent increase in loans.

The contrast between the banks in agricultural and nonagricultural counties is even more pronounced when borrowings from the Federal reserve banks are compared. These borrowings increased for banks in agricultural counties by about 128 millions, or 57 per cent, particularly heavy relative increases being shown for the Atlanta, Dallas, and Minneapolis districts. In the semiagricultural counties the amount of loans from Federal reserve banks shows practically no changes for the year, substantial increases in the Richmond and Atlanta districts being offset by a reduction of 10 millions in the Cleveland district. In nonagricultural counties the reduction of borrowings from Federal reserve banks is universal for all the districts, except Cleveland. For the system as a whole, the reduction in borrowings from Federal reserve banks amounted to about 502 millions; for banks in nonagricultural counties the reduction was 629 millions, which was offset in part by an increase of 128 millions in the borrowings of banks in agricultural counties.

Figures for the several Federal reserve districts are shown in the following table.

TABLE 30.—*Increase or decrease in loans and in borrowings* [1] *from Federal reserve banks by districts, 1920–21.*

[Amounts in millions of dollars.]

LOANS AND DISCOUNTS.

Federal reserve district.	Agricultural counties.		Semiagricultural counties.		Nonagricultural counties.		Total.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Boston	− 0.7	− 2.1	+ 1.6	+ 7.7	− 36.2	− 2.7	− 35.3	− 2.5
New York	+15.0	+10.2	+ 5.4	+ 7.1	−426.1	− 7.8	−405.7	− 7.1
Philadelphia	+ 9.6	+11.0	+ 1.5	+ 4.5	− 27.8	− 2.8	− 16.7	− 1.5
Cleveland	− 1.6	− 1.0	+ 7.5	+ 2.0	+100.8	+ 9.5	+106.7	+ 6.7
Richmond	+ 4.7	+ 2.4	− 0.5	− 0.3	− 9.3	− 1.7	− 5.1	− 0.6
Atlanta	+ 4.4	+ 2.9	+ 5.1	+ 4.5	− 58.7	−12.1	− 49.2	− 6.6
Dallas	−22.8	− 6.3	− 2.3	− 2.2	− 29.9	−12.6	− 55.0	− 7.8
Chicago	−16.4	− 2.4	−17.4	− 6.0	−132.3	− 6.3	−166.1	− 5.4
St. Louis	− 3.8	− 1.9	− 0.6	− 1.6	− 73.7	−11.8	− 78.1	− 9.1
Minneapolis	−19.1	− 4.8	− 4.6	− 6.1	− 40.7	−12.0	− 64.4	− 8.0
Kansas City	−52.9	−13.0	− 9.0	−10.4	− 75.4	−13.4	−137.3	−13.0
San Francisco	+47.1	+13.2	− 5.5	− 4.3	− 17.7	− 1.8	+ 24.0	+ 1.6
Total	−36.5	− 1.2	−18.7	− 1.3	−827.1	− 5.6	−882.3	− 4.5

BORROWINGS FROM FEDERAL RESERVE BANKS.[1]

Boston	+ 0.3	+ 11.8	+ 0.6	+61.6	− 29.3	−23.6	− 28.5	−22.3
New York	+ 0.7	+ 9.3	+ 0.3	+ 4.5	−206.9	−26.5	−205.9	−25.9
Philadelphia	− 1.9	− 17.9	− 0.2	− 6.3	− 73.3	−35.0	− 75.4	−33.7
Cleveland	− 1.0	− 13.7	−10.0	−34.0	+ 15.0	+15.0	+ 4.0	+ 2.9
Richmond	+ 6.9	+ 39.4	+ 4.7	+26.9	− 8.5	− 9.8	+ 3.0	+ 2.5
Atlanta	+ 16.2	+120.3	+ 9.6	+96.6	− 29.9	−32.0	− 4.1	− 3.5
Dallas	+ 22.0	+ 93.0	− 3.8	−25.3	− 24.0	−60.5	− 5.8	− 7.4
Chicago	+ 25.9	+ 45.1	− 0.2	− 0.7	−117.9	−32.0	− 92.2	−20.0
St. Louis	+ 6.8	+ 42.0	− 1.8	−46.9	− 80.5	−59.1	− 75.5	−48.3
Minneapolis	+ 18.3	+102.2	− 0.4	− 7.4	− 30.5	−46.9	− 12.6	−14.3
Kansas City	+ 11.3	+ 51.4	− 1.8	−23.9	− 41.6	−42.6	− 32.1	−25.2
San Francisco	+ 22.0	+ 75.3	+ 2.8	+50.0	− 1.6	− 1.5	+ 23.2	+16.6
Total	+127.6	+ 56.6	− 0.3	− 0.2	−629.1	−28.5	−501.8	−19.5

[1] Bills payable and rediscounts.

A comparison of borrowings with the so-called basic line is presented in the next table. On April 28, 1921, the borrowings of member banks from Federal reserve banks in agricultural counties were in excess of the so-called basic line in the southern and middle and far western districts, with the exception of Kansas City. In semiagricultural counties borrowings were below the basic line in all the districts except those of Richmond, Atlanta, and Chicago; while in the nonagricultural counties, all the districts, except Richmond and Atlanta, reported borrowings below the basic line.

Digitized by Google

TABLE 31.—*Borrowings*[1] *from Federal reserve banks, compared with "basic line" on Apr. 28, 1921.*

[Amounts in millions of dollars.]

Federal reserve district.	Agricultural counties.			Semiagricultural counties.			Nonagricultural counties.		
	Borrowings.	Basic line.	Ratio of borrowings to basic line.	Borrowings.	Basic line.	Ratio of borrowings to basic line.	Borrowings.	Basic line.	Ratio of borrowings to basic line.
	Amount.	*Amount.*	*Per cent.*	*Amount.*	*Amount.*	*Per cent.*	*Amount.*	*Amount.*	*Per cent.*
Boston	2.5	4.6	54.3	1.5	2.9	51.7	95.2	184.1	51.7
New York	8.8	24.6	35.8	6.4	10.7	59.8	574.1	1,083.0	53.0
Philadelphia	8.6	15.7	54.8	3.6	6.4	56.3	136.2	171.0	79.6
Cleveland	6.3	21.6	29.2	19.3	57.6	33.5	114.5	180.7	63.4
Richmond	24.3	19.9	122.1	22.1	12.7	174.0	78.3	68.8	113.8
Atlanta	29.6	15.9	186.2	19.4	12.4	156.5	63.6	55.0	115.6
Dallas	45.8	39.3	116.5	11.2	15.7	71.3	15.7	28.7	54.7
Chicago	83.4	72.2	115.5	33.1	31.6	104.7	250.3	300.1	83.4
St. Louis	23.0	22.2	103.6	2.0	4.2	47.6	55.7	88.8	62.7
Minneapolis	36.1	33.3	108.4	4.7	7.7	61.0	34.5	39.6	87.0
Kansas City	33.3	45.1	73.8	5.8	11.0	52.7	56.1	72.9	77.0
San Francisco	51.2	41.4	123.6	8.5	18.6	45.7	103.8	145.5	71.3
Total	353.1	355.8	99.2	137.6	191.4	71.9	1,577.8	2,418.1	65.2

[1] Bills payable and rediscounts.

Table 32 gives figures for the several Federal reserve districts, and for the country as a whole.

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive.*

LOANS AND DISCOUNTS.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
District 1, Boston:				
Agricultural	$35,246,397	$34,523,411	− $722,986	− 2.05
Semiagricultural	21,287,534	22,915,168	+ 1,627,634	+ 7.65
Nonagricultural	1,332,045,856	1,295,870,067	− 36,175,789	− 2.72
District 2, New York:				
Agricultural	146,502,212	161,462,092	+ 14,959,880	+10.21
Semiagricultural	76,443,410	81,890,480	+ 5,447,070	+ 7.13
Nonagricultural	5,494,705,478	5,068,604,081	−426,101,397	− 7.75
District 3, Philadelphia:				
Agricultural	87,168,244	96,755,983	+ 9,587,739	+11.00
Semiagricultural	33,249,202	34,735,874	+ 1,486,672	+ 4.47
Nonagricultural	1,003,740,244	975,930,105	− 27,810,139	− 2.77
District 4, Cleveland:				
Agricultural	162,495,912	160,846,267	− 1,649,645	− 1.02
Semiagricultural	367,791,599	375,296,122	+ 7,504,523	+ 2.04
Nonagricultural	1,062,185,432	1,163,025,917	+100,840,485	+ 9.49
District 5, Richmond:				
Agricultural	197,334,413	202,080,747	+ 4,746,334	+ 2.41
Semiagricultural	147,165,715	146,680,925	− 484,790	− 0.33
Nonagricultural	552,045,667	542,706,143	− 9,339,524	− 1.69
District 6, Atlanta:				
Agricultural	150,312,605	154,720,320	+ 4,407,715	+ 2.93
Semiagricultural	113,330,013	118,438,699	+ 5,108,686	+ 4.51
Nonagricultural	484,083,946	425,350,339	− 58,733,607	−12.13
District 7, Chicago:				
Agricultural	691,857,488	675,480,514	− 16,376,974	− 2.37
Semiagricultural	291,935,614	274,549,428	− 17,386,186	− 5.96
Nonagricultural	2,107,585,822	1,975,210,711	−132,375,111	− 6.28
District 8, St. Louis:				
Agricultural	200,058,067	196,212,740	− 3,845,327	− 1.92
Semiagricultural	34,878,827	34,306,868	− 571,959	− 1.64
Nonagricultural	623,916,781	550,231,539	− 73,685,242	−11.81
District 9, Minneapolis:				
Agricultural	395,160,240	376,032,213	− 19,128,027	− 4.84
Semiagricultural	76,255,595	71,630,394	− 4,625,201	− 6.07
Nonagricultural	338,463,580	297,796,372	− 40,667,208	−12.02
District 10, Kansas City:				
Agricultural	406,677,903	353,818,589	− 52,859,314	−13.00
Semiagricultural	86,990,778	77,963,042	− 9,027,736	−10.38
Nonagricultural	564,857,395	489,452,025	− 75,405,370	−13.35
District 11, Dallas:				
Agricultural	359,995,120	337,216,517	− 22,778,603	− 6.33
Semiagricultural	106,506,803	104,207,690	− 2,298,113	− 2.16
Nonagricultural	237,410,342	207,492,900	− 29,917,442	−12.60
District 12, San Francisco:				
Agricultural	357,339,094	404,449,654	+ 47,110,560	+13.18
Semiagricultural	128,267,386	122,812,963	− 5,454,423	− 4.25
Nonagricultural	990,295,886	972,600,149	− 17,695,737	− 1.79

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1-12, inclusive*—Continued.

CONSOLIDATED FIGURES—FEDERAL RESERVE DISTRICTS NOS. 1-12, INCLUSIVE.

[Agricultural counties, 2,266; semiagricultural counties, 344; nonagricultural counties, 432.]

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Capital and surplus:				
Agricultural	$565,851,159	$622,632,805	+ $56,781,646	+10.03
Semiagricultural	260,271,224	279,222,125	+ 18,950,901	+ 7.28
Nonagricultural	2,316,403,732	2,500,537,567	+ 184,133,835	+ 7.95
Demand deposits:				
Agricultural	2,344,847,419	1,875,394,464	— 469,452,955	—20.02
Semiagricultural	1,064,827,547	924,878,262	— 139,949,285	—13.14
Nonagricultural	11,424,109,317	10,273,585,103	—1,150,524,214	—10.07
Time deposits:				
Agricultural	1,370,399,728	1,428,095,281	+ 57,695,553	+ 4.21
Semiagricultural	620,055,519	672,256,585	+ 52,201,066	+ 8.42
Nonagricultural	3,757,603,504	4,242,397,896	+ 484,794,392	+12.90
Loans and discounts:				
Agricultural	3,190,147,695	3,153,599,047	— 36,548,648	— 1.15
Semiagricultural	1,484,101,476	1,465,427,653	— 18,673,823	— 1.26
Nonagricultural	14,791,336,429	13,964,270,348	— 827,066,081	— 5.59
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	$107,432,200	$225,448,719	+ $118,016,519	+109.85
Semiagricultural	67,192,400	88,115,662	+ 20,923,262	+ 31.14
Nonagricultural	1,150,219,942	926,372,874	— 223,847,068	— 19.46
2. Bills payable—				
Agricultural	118,070,897	127,606,396	+ 9,535,499	+ 8.08
Semiagricultural	70,755,579	49,513,281	— 21,242,298	— 30.02
Nonagricultural	1,056,640,863	651,431,741	— 405,209,122	— 38.35
Total—				
Agricultural	225,503,097	353,055,115	+ 127,552,018	+ 56.56
Semiagricultural	137,947,979	137,628,943	— 319,036	— .23
Nonagricultural	2,206,860,805	1,577,804,615	— 629,056,190	— 28.50
Basic lines:				
Agricultural	419,665,631	355,783,620	— 63,882,011	— 15.22
Semiagricultural	201,556,825	191,382,822	— 10,174,003	— 5.05
Nonagricultural	2,665,573,169	2,418,094,644	— 247,478,525	— 9.28
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	16,880,548	22,822,426	+ 5,941,878	+ 35.20
Semiagricultural	10,878,673	8,744,015	— 2,134,658	— 19.62
Nonagricultural	28,527,797	20,826,097	— 7,701,700	— 27.00
2. Bills payable—				
Agricultural	51,989,480	91,292,460	+ 39,302,980	+ 75.60
Semiagricultural	21,061,122	29,251,709	+ 8,190,587	+ 38.89
Semiagricultural	60,395,765	68,604,848	+ 8,209,083	+ 13.59
Total—				
Agricultural	68,870,028	114,114,886	+ 45,244,858	+ 65.70
Semiagricultural	31,939,795	37,995,724	+ 6,055,929	+ 18.96
Nonagricultural	88,922,562	89,430,945	+ 507,383	+ .57

a. FEDERAL RESERVE DISTRICT NO. 1—BOSTON.

[Agricultural counties, 13; semiagricultural counties, 6; nonagricultural counties, 47.]

Capital and surplus:				
Agricultural	$8,272,250	$8,608,000	+ $335,750	+ 4.06
Semiagricultural	5,736,000	6,040,500	+ 304,500	+ 5.31
Nonagricultural	239,362,525	249,127,810	+ 9,765,285	+ 4.08
Demand deposits:				
Agricultural	28,716,445	21,953,785	— 6,762,660	— 23.55
Semiagricultural	15,807,740	13,987,561	— 1,820,179	— 11.51
Nonagricultural	1,163,502,137	1,013,339,297	—150,162,840	— 12.91
Time deposits:				
Agricultural	18,379,585	21,659,443	+ 3,279,858	+ 17.85
Semiagricultural	9,817,259	12,244,237	+ 2,426,978	+ 24.72
Nonagricultural	286,001,277	356,924,562	+ 70,923,285	+ 24.80
Loans and discounts:				
Agricultural	35,246,397	34,523,411	— 722,986	— 2.05
Semiagricultural	21,287,534	22,915,168	+ 1,627,634	+ 7.65
Nonagricultural	1,332,045,856	1,295,870,067	— 36,175,789	— 2.72

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

a. FEDERAL RESERVE DISTRICT NO. 1—BOSTON—Continued.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	$909,110	$925,454	+ $16,344	+ 1.80
Semiagricultural	199,979	614,536	+ 414,557	+207.30
Nonagricultural	87,017,404	71,236,987	− 15,780,417	− 18.13
2. Bills payable—				
Agricultural	1,285,200	1,527,000	+ 241,800	+ 18.81
Semiagricultural	700,100	840,300	+ 140,200	+ 20.03
Nonagricultural	37,447,250	23,915,700	− 13,531,550	− 36.13
Total—				
Agricultural	2,194,310	2,452,454	+ 258,144	+ 11.76
Semiagricultural	900,079	1,454,836	+ 554,757	+ 61.63
Nonagricultural	124,464,654	95,152,687	− 29,311,967	− 23.55
Basic lines:				
Agricultural	4,488,890	4,585,962	+ 96,972	+ 2.16
Semiagricultural	2,802,469	2,910,106	+ 107,637	+ 3.84
Nonagricultural	193,812,328	184,057,371	− 9,754,957	− 5.03
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	$52,071	$191,944	+ $139,873	+268.62
Semiagricultural	10,900	35,296	+ 24,396	+223.82
Nonagricultural	596,897	381,783	− 215,114	− 36.04
2. Bills payable—				
Agricultural	645,000	683,000	+ 38,000	+ 5.89
Semiagricultural	521,200	399,500	− 121,700	− 23.35
Nonagricultural	2,532,365	3,999,625	+ 1,467,260	+ 57.94
Total—				
Agricultural	697,071	874,944	+ 177,873	+ 25.52
Semiagricultural	532,100	434,796	− 97,304	− 18.29
Nonagricultural	3,129,262	4,381,408	+ 1,252,146	+ 40.01

b. FEDERAL RESERVE DISTRICT NO. 2—NEW YORK.

[Agricultural counties, 27; semiagricultural counties, 11; nonagricultural counties, 37.]

Capital and surplus:				
Agricultural	$33,087,400	$34,935,044	+ $1,847,644	+ 5.58
Semiagricultural	13,206,700	13,937,650	+ 730,950	+ 5.53
Nonagricultural	771,875,840	846,310,652	+ 74,434,812	+ 9.64
Demand deposits:				
Agricultural	133,030,148	121,108,205	− 11,921,943	− 8.96
Semiagricultural	58,785,437	54,840,359	− 3,945,078	− 6.71
Nonagricultural	4,752,948,657	4,300,239,036	−452,709,621	− 9.52
Time deposits:				
Agricultural	101,676,070	130,622,890	+ 28,946,820	+ 28.47
Semiagricultural	48,796,033	56,276,548	+ 7,480,515	+ 15.33
Nonagricultural	710,611,341	819,785,225	+109,173,884	+ 15.36
Loans and discounts:				
Agricultural	146,502,212	161,462,092	+ 14,959,880	+ 10.21
Semiagricultural	76,443,410	81,890,480	+ 5,447,070	+ 7.13
Nonagricultural	5,494,705,478	5,068,604,081	−426,101,397	− 7.75
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	1,332,835	1,357,143	+ 24,308	+ 1.82
Semiagricultural	1,214,473	2,665,366	+ 1,450,893	+119.47
Nonagricultural	289,202,499	263,940,856	− 25,261,643	− 8.73
2. Bills payable—				
Agricultural	6,728,900	7,450,100	+ 721,200	+ 10.72
Semiagricultural	4,881,512	3,705,387	− 1,176,125	− 24.09
Nonagricultural	491,779,045	310,163,148	−181,615,897	− 36.93
Total—				
Agricultural	8,061,735	8,807,243	+ 745,508	+ 9.25
Semiagricultural	6,095,985	6,370,753	+ 274,768	+ 4.51
Nonagricultural	780,981,544	574,104,004	−206,877,540	− 26.49
Basic lines:				
Agricultural	24,244,344	24,642,228	+ 397,884	+ 1.64
Semiagricultural	11,029,595	10,716,628	− 312,967	− 2.84
Nonagricultural	1,225,587,227	1,082,965,358	−142,621,869	− 11.64

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

b. FEDERAL RESERVE DISTRICT No. 1—NEW YORK—Continued.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	$243,591	$255,263	+ $11,672	+ 4.79
Semiagricultural	25,300	187,738	+ 162,438	+642.05
Nonagricultural	7,892,112	219,889	− 7,672,223	− 97.21
2. Bills payable—				
Agricultural	1,686,136	1,167,000	− 519,136	− 30.79
Semiagricultural	85,000	359,894	+ 274,894	+323.40
Nonagricultural	5,020,303	7,402,818	+ 2,382,515	+ 47.46
Total—				
Agricultural	1,929,727	1,422,263	− 507,464	− 26.30
Semiagricultural	110,300	547,632	+ 437,332	+396.49
Nonagricultural	12,912,415	7,622,707	− 5,289,708	− 40.97

c. FEDERAL RESERVE DISTRICT NO. 3—PHILADELPHIA.

[Agricultural counties, 25; semiagricultural counties, 6; nonagricultural counties, 29.]

Capital and surplus:				
Agricultural	$27,372,800	$30,494,356	+$3,121,556	+ 11.40
Semiagricultural	11,506,260	11,568,500	+ 62,240	+ .54
Nonagricultural	236,993,169	245,028,780	+ 8,035,611	+ 3.39
Demand deposits:				
Agricultural	70,993,990	67,767,159	− 3,226,831	− 4.55
Semiagricultural	32,870,265	30,175,321	− 2,694,944	− 8.20
Nonagricultural	874,053,814	813,577,170	−60,476,644	− 6.92
Time deposits:				
Agricultural	71,207,370	90,538,842	+19,331,472	+ 27.15
Semiagricultural	26,431,648	31,397,672	+ 4,966,024	+ 18.79
Nonagricultural	265,063,769	325,297,618	+60,233,849	+ 22.72
Loans and discounts:				
Agricultural	87,168,244	96,755,983	+ 9,587,739	+ 11.00
Semiagricultural	33,249,202	34,735,874	+ 1,486,672	+ 4.47
Nonagricultural	1,003,740,244	975,930,105	−27,810,139	− 2.77
Borrowings from Federal Reserve Bank:				
1. Rediscounts—				
Agricultural	836,939	927,346	+ 90,407	+ 10.80
Semiagricultural	319,647	522,307	+ 202,660	+ 63.40
Nonagricultural	78,528,101	52,877,674	−25,650,427	− 32.66
2. Bills payable—				
Agricultural	9,637,900	7,677,070	− 1,960,830	− 20.34
Semiagricultural	3,524,312	3,078,100	− 446,212	− 12.66
Nonagricultural	130,957,653	83,293,252	−47,664,401	− 36.40
Total—				
Agricultural	10,474,839	8,604,416	− 1,870,423	− 17.86
Semiagricultural	3,843,959	3,600,407	− 243,552	− 6.34
Nonagricultural	209,485,754	136,170,926	−73,314,828	− 35.00
Basic lines:				
Agricultural	14,440,520	15,702,125	+ 1,261,605	+ 8.74
Semiagricultural	6,194,480	6,353,875	+ 159,395	+ 2.57
Nonagricultural	169,591,624	171,002,525	+ 1,410,901	+ .83
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	175,882	74,958	− 100,924	− 57.38
Semiagricultural	15,000	30,000	+ 15,000	+100.00
Nonagricultural	119,121	198,565	+ 79,444	+ 66.69
2. Bills payable—				
Agricultural	722,000	1,024,000	+ 302,000	+ 41.83
Semiagricultural	117,092	284,125	+ 167,033	+142.65
Nonagricultural	2,368,000	3,289,800	+ 921,800	+ 38.93
Total—				
Agricultural	897,882	1,098,958	+ 201,076	+ 22.39
Semiagricultural	132,092	314,125	+ 182,033	+137.81
Nonagricultural	2,487,121	3,488,365	+ 1,001,244	+ 40.26

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

d. FEDERAL RESERVE DISTRICT NO. 4—CLEVELAND.

[Agricultural counties, 86; semiagricultural counties, 29; nonagricultural counties, 54.]

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Capital and surplus:				
Agricultural	$36,214,685	$37,848,633	+ $1,633,948	+ 4.51
Semiagricultural	74,917,162	78,196,000	+ 3,278,838	+ 4.38
Nonagricultural	224,890,946	252,926,167	+ 28,035,221	+ 12.47
Demand deposits:				
Agricultural	138,912,426	122,511,398	− 16,401,028	− 11.81
Semiagricultural	274,235,533	267,083,212	− 7,152,321	− 2.61
Nonagricultural	824,543,630	811,961,063	− 12,582,567	− 1.53
Time deposits:				
Agricultural	62,404,230	67,875,004	+ 5,470,774	+ 8.77
Semiagricultural	153,122,016	170,265,748	+ 17,143,732	+ 11.20
Nonagricultural	507,875,592	608,819,277	+100,943,685	+ 19.88
Loans and discounts:				
Agricultural	162,495,912	160,846,267	− 1,649,645	− 1.02
Semiagricultural	367,791,599	375,296,122	+ 7,504,523	+ 2.04
Nonagricultural	1,062,185,432	1,163,025,917	+100,840,485	+ 9.49
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	4,074,545	3,275,484	− 799,061	− 19.61
Semiagricultural	18,242,725	14,804,486	− 3,438,239	− 18.85
Nonagricultural	52,031,805	72,834,947	+ 20,803,142	+ 39.98
2. Bills payable—				
Agricultural	3,278,750	3,067,142	− 211,608	− 6.45
Semiagricultural	11,023,500	4,507,887	− 6,515,613	− 59.11
Nonagricultural	47,498,890	41,653,570	− 5,845,320	− 12.31
Total—				
Agricultural	7,353,295	6,342,626	− 1,010,669	− 13.74
Semiagricultural	29,266,225	19,312,373	− 9,953,852	− 34.01
Nonagricultural	99,530,695	114,488,517	+ 14,957,822	+ 15.03
Basic lines:				
Agricultural	22,948,476	21,572,590	− 1,375,886	− 6.00
Semiagricultural	57,743,591	57,592,245	− 151,346	− .26
Nonagricultural	176,950,492	180,728,303	+ 3,777,811	+ 2.13
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	520,439	528,331	+ 7,892	+ 1.52
Semiagricultural	316,217	536,204	+ 219,987	+ 69.57
Nonagricultural	72,002	348,616	+ 276,614	+384.18
2. Bills payable—				
Agricultural	2,598,247	3,312,859	+ 714,612	+ 27.50
Semiagricultural	2,660,000	1,379,450	− 1,280,550	− 48.14
Nonagricultural	2,302,216	3,433,227	+ 1,131,011	+ 49.13
Total—				
Agricultural	3,118,686	3,841,190	+ 722,504	+ 23.17
Semiagricultural	2,976,217	1,915,654	− 1,060,563	− 35.63
Nonagricultural	2,374,218	3,781,843	+ 1,407,625	+ 59.29

e. FEDERAL RESERVE DISTRICT NO. 5—RICHMOND.

[Agricultural counties, 202; semiagricultural counties, 70; nonagricultural counties, 47.]

Capital and surplus:				
Agricultural	$36,999,000	$42,213,947	+$5,214,947	+ 14.09
Semiagricultural	24,442,611	27,829,106	+ 3,386,495	+ 13.85
Nonagricultural	100,362,607	109,798,575	+ 9,435,968	+ 9.40
Demand deposits:				
Agricultural	124,127,718	101,580,310	−22,547,408	− 18.16
Semiagricultural	90,117,577	70,097,435	−20,020,142	− 22.22
Nonagricultural	359,688,248	327,985,681	−31,702,567	− 8.81
Time deposits:				
Agricultural	103,699,419	111,529,379	+ 7,829,960	+ 7.55
Semiagricultural	57,925,588	60,904,448	+ 2,978,860	+ 5.14
Nonagricultural	162,614,835	180,788,780	+18,173,945	+ 11.18
Loans and discounts:				
Agricultural	197,334,413	202,080,747	+ 4,746,334	+ 2.41
Semiagricultural	147,165,715	146,680,925	− 484,790	− .33
Nonagricultural	552,045,667	542,706,143	− 9,339,524	− 1.69

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

e. FEDERAL RESERVE DISTRICT NO. 5—RICHMOND—Continued.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	$5,718,617	$13,348,646	+$7,630,029	+133.42
Semiagricultural	4,079,657	12,150,615	+ 8,070,958	+197.83
Nonagricultural	39,160,699	50,509,885	+11,349,186	+ 28.98
2. Bills payable—				
Agricultural	11,710,850	10,955,167	— 755,683	— 6.45
Semiagricultural	13,329,800	9,949,552	— 3,380,248	— 25.36
Nonagricultural	47,636,300	27,744,884	—19,891,416	— 41.76
Total—				
Agricultural	17,429,467	24,303,813	+ 6,874,346	+ 39.44
Semiagricultural	17,409,457	22,100,167	+ 4,690,710	+ 26.94
Nonagricultural	86,796,999	78,254,769	— 8,542,230	— 9.84
Basic lines:				
Agricultural	21,986,833	19,871,913	— 2,114,920	— 9.62
Semiagricultural	12,866,940	12,708,304	— 158,636	— 1.23
Nonagricultural	74,882,503	68,832,074	— 6,050,429	— 8.08
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	$2,129,834	$2,046,979	— $82,855	— 3.89
Semiagricultural	2,094,832	2,199,602	+ 104,770	+ 5.00
Nonagricultural	2,622,425	2,537,748	— 84,677	— 3.23
2. Bills payable—				
Agricultural	2,474,673	3,736,950	+ 1,262,277	+ 51.01
Semiagricultural	1,748,800	3,772,000	+ 2,023,200	+115.69
Nonagricultural	11,237,000	9,783,522	— 1,453,478	— 12.93
Total—				
Agricultural	4,604,507	5,783,929	+ 1,179,422	+ 25.61
Semiagricultural	3,843,632	5,971,602	+ 2,127,970	+ 55.36
Nonagricultural	13,859,425	12,321,270	— 1,538,155	— 11.10

f. FEDERAL RESERVE DISTRICT NO. 6—ATLANTA.

[Agricultural counties, 320; semiagricultural counties, 84; nonagricultural counties, 28.]

Capital and surplus:				
Agricultural	$31,426,700	$36,817,717	+$5,391,017	+ 17.15
Semiagricultural	22,581,768	26,856,552	+ 4,274,784	+ 18.93
Nonagricultural	71,762,971	72,188,600	+ 425,629	+ .59
Demand deposits:				
Agricultural	122,417,650	87,286,599	—35,131,051	— 28.70
Semiagricultural	90,695,767	70,304,914	—20,390,853	— 22.48
Nonagricultural	315,248,479	245,663,803	—69,584,676	— 22.07
Time deposits:				
Agricultural	50,047,357	50,683,046	+ 635,689	+ 1.27
Semiagricultural	33,305,562	37,656,535	+ 4,350,973	+ 13.06
Nonagricultural	164,884,751	160,084,644	— 4,800,107	— 2.91
Loans and discounts:				
Agricultural	150,312,605	154,720,320	+ 4,407,715	+ 2.93
Semiagricultural	113,330,013	118,438,699	+ 5,108,686	+ 4.51
Nonagricultural	484,083,946	425,350,339	—58,733,607	— 12.13
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	5,282,582	20,291,751	+15,009,169	+284.13
Semiagricultural	4,860,483	13,647,834	+ 8,787,351	+180.79
Nonagricultural	51,397,235	35,184,800	—16,212,435	— 31.54
Bills payable—				
Agricultural	8,175,400	9,349,850	+ 1,174,450	+ 14.37
Semiagricultural	5,027,350	5,790,970	+ 763,620	+ 15.19
Nonagricultural	42,079,380	28,425,500	—13,653,880	— 32.45
Total—				
Agricultural	13,457,982	29,641,601	+16,183,619	+120.25
Semiagricultural	9,887,833	19,438,804	+ 9,550,971	+ 96.59
Nonagricultural	93,476,615	63,610,300	—29,866,315	— 31.95
Basic lines:				
Agricultural	20,275,720	15,865,793	— 4,409,927	— 21.75
Semiagricultural	14,432,213	12,390,747	— 2,041,466	— 14.15
Nonagricultural	64,670,705	55,049,291	— 9,621,414	— 14.88

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

f. FEDERAL RESERVE DISTRICT NO. 6—ATLANTA—Continued.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	$464,519	$1,582,862	+$1,118,343	+240.75
Semiagricultural	1,275,683	1,680,899	+ 405,216	+ 31.76
Nonagricultural	1,536,223	2,598,807	+ 1,062,584	+ 69.17
2. Bills payable—				
Agricultural	2,423,000	7,212,457	+ 4,789,457	+197.67
Semiagricultural	1,613,800	4,910,084	+ 3,296,284	+204.26
Nonagricultural	3,851,667	8,615,643	+ 4,763,976	+123.69
Total—				
Agricultural	2,887,519	8,795,319	+ 5,907,800	+204.60
Semiagricultural	2,889,483	6,590,983	+ 3,701,500	+128.10
Nonagricultural	5,387,890	11,214,450	+ 5,826,560	+108.14

g. FEDERAL RESERVE DISTRICT NO. 7—CHICAGO.

[Agricultural counties, 274; semiagricultural counties, 37; nonagricultural counties, 27.]

Capital and surplus:				
Agricultural	$106,862,212	$115,110,812	+ $8,248,600	+ 7.72
Semiagricultural	43,073,123	45,399,250	+ 2,326,127	+ 5.40
Nonagricultural	290,454,700	313,372,500	+ 22,917,800	+ 7.89
Demand deposits:				
Agricultural	415,027,195	336,172,204	− 78,854,991	− 19.00
Semiagricultural	176,691,470	143,269,743	− 33,421,727	− 18.92
Nonagricultural	1,331,258,578	1,171,489,539	−159,769,039	− 12.00
Time deposits:				
Agricultural	391,022,512	377,347,877	− 13,674,635	− 3.50
Semiagricultural	146,346,494	148,037,469	+ 1,690,975	+ 1.16
Nonagricultural	730,019,757	750,965,330	+ 20,945,573	+ 2.87
Loans and discounts:				
Agricultural	691,857,488	675,480,514	− 16,376,974	− 2.37
Semiagricultural	291,935,614	274,549,428	− 17,386,186	− 5.96
Nonagricultural	2,107,585,822	1,975,210,711	−132,375,111	− 6.28
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	31,033,769	53,890,711	+ 22,856,942	+ 73.65
Semiagricultural	16,819,116	22,410,404	+ 5,591,288	+ 33.24
Nonagricultural	245,053,477	186,657,769	− 58,395,708	− 23.83
2. Bills payable—				
Agricultural	26,458,641	29,532,749	+ 3,074,108	+ 11.62
Semiagricultural	16,454,300	10,647,533	− 5,806,767	− 35.29
Nonagricultural	123,227,900	63,680,315	− 59,547,585	− 48.32
Total—				
Agricultural	57,492,410	83,423,460	+ 25,931,050	+ 45.10
Semiagricultural	33,273,416	33,057,937	− 215,479	− .65
Nonagricultural	368,281,377	250,338,084	−117,943,293	− 32.03
Basic lines:				
Agricultural	82,153,751	72,231,008	− 9,922,743	− 12.08
Semiagricultural	35,618,179	31,573,819	− 4,044,360	− 11.35
Nonagricultural	353,038,669	300,060,802	− 52,977,867	− 15.01
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	2,287,184	6,970,987	+ 4,683,803	+204.78
Semiagricultural	4,268,369	2,056,250	− 2,212,119	− 51.83
Nonagricultural	3,528,847	5,802,513	+ 2,273,666	+ 64.43
2. Bills payable—				
Agricultural	9,331,013	16,043,818	+ 6,712,805	+ 71.94
Semiagricultural	4,412,500	6,060,200	+ 1,647,700	+ 37.34
Nonagricultural	2,777,000	6,217,204	+ 3,440,204	+123.88
Total—				
Agricultural	11,618,197	23,014,805	+ 11,396,608	+ 98.09
Semiagricultural	8,680,869	8,116,450	− 564,419	− 6.50
Nonagricultural	6,305,847	12,019,717	+ 5,713,870	+ 90.61

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

k. FEDERAL RESERVE DISTRICT NO. 8—ST. LOUIS.

[Agricultural counties, 317; semiagricultural counties, 19; nonagricultural counties, 27.]

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Capital and surplus:				
Agricultural	$38,663,637	$42,187,543	+$3,493,906	+ 9.03
Semiagricultural	5,443,100	6,042,000	+ 598,900	+ 11.00
Nonagricultural	97,391,978	100,768,931	+ 3,377,053	+ 3.47
Demand deposits:				
Agricultural	158,925,601	132,556,500	−26,369,101	− 16.59
Semiagricultural	24,638,544	22,972,129	− 1,666,415	− 6.76
Nonagricultural	376,749,392	345,184,582	−31,564,810	− 8.38
Time deposits:				
Agricultural	55,595,508	62,503,918	+ 6,908,410	+ 12.43
Semiagricultural	17,589,772	19,412,778	+ 1,823,006	+ 10.36
Nonagricultural	160,554,141	187,593,166	+27,039,025	+ 16.84
Loans and discounts:				
Agricultural	200,058,067	196,212,740	− 3,845,327	− 1.92
Semiagricultural	34,878,827	34,306,868	− 571,959	− 1.64
Nonagricultural	623,916,781	550,231,539	−73,685,242	− 11.81
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	$5,151,863	$12,752,355	+$7,600,492	+147.53
Semiagricultural	2,342,446	982,083	− 1,360,363	− 58.07
Nonagricultural	99,830,854	36,871,729	−62,959,125	− 63.07
2. Bills payable—				
Agricultural	11,056,900	10,261,429	− 795,471	− 7.19
Semiagricultural	1,499,500	1,056,582	− 442,918	− 29.54
Nonagricultural	36,360,714	18,822,062	−17,538,652	− 48.24
Total—				
Agricultural	16,208,763	23,013,784	+ 6,805,021	+ 41.98
Semiagricultural	3,841,946	2,038,665	− 1,803,281	− 46.94
Nonagricultural	136,191,568	55,693,791	−80,497,777	− 59.11
Basic tines:				
Agricultural	25,038,090	22,192,500	− 2,845,590	− 11.37
Semiagricultural	3,999,300	4,239,700	+ 240,400	+ 6.01
Nonagricultural	95,401,700	88,769,700	− 6,632,000	− 6.95
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	1,270,955	766,670	− 504,285	− 39.68
Semiagricultural	265,100	41,753	− 223,347	− 84.25
Nonargricultural	2,556,632	2,105,528	− 451,104	− 17.64
2. Bills payable—				
Agricultural	5,754,196	7,777,950	+ 2,023,754	+ 35.17
Semiagricultural	739,956	639,500	− 100,456	− 13.58
Nonagricultural	5,739,000	4,105,558	− 1,633,442	− 28.46
Total—				
Agricultural	7,025,151	8,544,620	+ 1,519,469	+ 21.63
Semiagricultural	1,005,056	681,253	− 323,803	− 32.22
Nonagricultural	8,295,632	6,211,086	− 2,084,546	− 25.13

l. FEDERAL RESERVE DISTRICT NO. 9—MINNEAPOLIS.

[Agricultural counties, 246; semiagricultural counties, 30; nonagricultural counties, 20.]

Capital and surplus:				
Agricultural	$51,170,417	$53,895,441	+$2,725,024	+ 5.33
Semiagricultural	10,129,500	10,832,600	+ 703,100	+ 6.94
Nonagricultural	48,153,675	52,600,400	+ 4,446,725	+ 9.23
Demand deposits:				
Agricultural	190,478,969	144,795,358	−45,683,611	− 23.98
Semiagricultural	34,940,437	32,201,548	− 2,738,889	− 7.84
Nonagricultural	192,658,135	169,001,465	−23,656,670	− 12.28
Time deposits:				
Agricultural	235,254,371	219,090,185	−16,164,186	− 6.87
Semiagricultural	37,349,002	38,254,529	+ 905,527	+ 2.42
Nonagricultural	100,719,959	111,714,098	+10,994,139	+ 10.92
Loans and discounts:				
Agricultural	395,160,240	376,032,213	−19,128,027	− 4.84
Semiagricultural	76,255,595	71,630,394	− 4,625,201	− 6.07
Nonagricultural	338,463,580	297,796,372	−40,667,208	− 12.02

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

i. FEDERAL RESERVE DISTRICT NO. 9—MINNEAPOLIS—Continued.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	$11,567,166	$26,598,515	+$15,031,349	+129.95
Semiagricultural	2,803,175	3,186,087	+ 382,912	+ 13.66
Nonagricultural	53,341,417	28,205,766	− 25,135,651	− 47.12
2. Bills payable—				
Agricultural	6,300,285	9,535,788	+ 3,235,503	+ 51.35
Semiagricultural	2,297,300	1,534,240	− 763,060	− 33.22
Nonagricultural	11,592,600	6,256,800	− 5,335,200	− 46.02
Total—				
Agricultural	17,867,451	36,134,303	+ 18,266,852	+102.24
Semiagricultural	5,100,475	4,720,327	− 380,148	− 7.45
Nonagricultural	64,933,417	34,462,566	− 30,470,851	− 46.93
Basic lines:				
Agricultural	42,349,395	33,257,635	− 9,091,760	− 21.47
Semiagricultural	7,908,574	7,652,806	− 255,768	− 3.23
Nonagricultural	47,570,037	39,615,935	− 7,954,102	− 16.72
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	$1,664,863	$1,967,709	+ $302,846	+ 18.19
Semiagricultural	506,441	209,639	− 296,802	− 58.61
Nonagricultural	271,549	176,280	− 95,269	− 35.08
2. Bills payable—				
Agricultural	7,644,152	15,068,720	+ 7,424,568	+ 97.13
Semiagricultural	3,689,768	3,020,052	− 669,716	− 18.15
Nonagricultural	2,508,000	1,736,100	− 771,900	− 30.78
Total—				
Agricultural	9,309,015	17,036,429	+ 7,727,414	+ 83.01
Semiagricultural	4,196,209	3,229,691	− 966,518	− 23.03
Nonagricultural	2,779,549	1,912,380	− 867,169	− 31.20

j. FEDERAL RESERVE DISTRICT NO. 10—KANSAS CITY.

[Agricultural counties, 306; semiagricultural counties, 17; nonagricultural counties, 58.]

Capital and surplus:				
Agricultural	$64,289,786	$66,885,860	+$2,596,074	+ 4.04
Semiagricultural	11,909,000	12,377,500	+ 468,500	+ 3.93
Nonagricultural	67,202,762	70,413,451	+ 3,210,689	+ 4.78
Demand deposits:				
Agricultural	326,744,776	247,678,817	−79,065,959	−24.20
Semiagricultural	66,633,299	55,629,243	−11,004,056	−16.51
Nonagricultural	397,227,592	343,035,228	−54,192,364	−13.64
Time deposits:				
Agricultural	110,122,718	100,808,240	− 9,314,478	− 8.46
Semiagricultural	21,069,300	22,839,949	+ 1,770,649	+ 8.40
Nonagricultural	112,664,623	119,112,424	+ 6,447,801	+ 5.72
Loans and discounts:				
Agricultural	406,077,903	353,818,589	−52,859,314	−13.02
Semiagricultural	86,990,778	77,963,042	− 9,027,736	−10.38
Nonagricultural	564,857,395	489,452,025	−75,405,370	−13.35
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	12,597,337	24,088,167	+11,488,830	+91.20
Semiagricultural	5,558,595	3,675,810	− 1,882,785	−33.87
Nonagricultural	70,794,424	39,181,822	−31,612,602	−44.65
2. Bills payable—				
Agricultural	9,422,362	9,245,050	− 177,312	− 1.88
Semiagricultural	2,094,000	2,145,475	+ 51,475	+ 2.46
Nonagricultural	26,838,981	16,885,169	− 9,953,812	−37.09
Total—				
Agricultural	22,019,699	33,331,217	+11,311,518	+51.37
Semiagricultural	7,652,595	5,821,285	− 1,831,310	−23.93
Nonagricultural	97,633,405	56,066,991	−41,566,414	−42.57
Basic lines:				
Agricultural	58,582,507	45,070,898	−13,511,609	−23.06
Semiagricultural	12,749,017	10,988,096	− 1,760,921	−13.81
Nonagricultural	81,855,511	72,854,048	− 9,001,463	−11.00

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

j. FEDERAL RESERVE DISTRICT NO. 10—KANSAS CITY—Continued.

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	$3,224,568	$3,070,312	− $154,256	− 4.78
Semiagricultural	932,183	307,861	− 624,322	−66.97
Nonagricultural	6,647,689	4,701,492	− 1,946,197	−29.28
2. Bills payable—				
Agricultural	4,569,573	7,726,877	+ 3,157,304	+69.09
Semiagricultural	2,482,506	2,012,670	− 469,836	−18.93
Nonagricultural	15,280,714	6,400,957	− 8,879,757	−58.11
Total—				
Agricultural	7,794,141	10,797,189	+ 3,003,048	+38.53
Semiagricultural	3,414,689	2,320,531	− 1,094,158	−32.04
Nonagricultural	21,928,403	11,102,449	−10,825,954	−49.37

k. FEDERAL RESERVE DISTRICT NO. 11—DALLAS.

[Agricultural counties, 290; semiagricultural counties, 8; nonagricultural counties, 17.]

Capital and surplus:				
Agricultural	$75,248,655	$83,462,028	+$8,213,373	+ 10.91
Semiagricultural	16,165,000	18,637,112	+ 2,472,112	+ 15.29
Nonagricultural	31,468,200	37,118,950	+ 5,650,750	+ 17.96
Demand deposits:				
Agricultural	341,938,793	246,962,151	−94,976,642	− 27.78
Semiagricultural	89,411,761	78,243,136	−11,168,625	− 12.49
Nonagricultural	201,095,648	153,043,344	−48,052,304	− 23.90
Time deposits:				
Agricultural	39,300,487	40,336,907	+ 1,036,420	+ 2.64
Semiagricultural	17,638,809	22,970,681	+ 5,331,872	+ 30.23
Nonagricultural	35,713,981	41,872,140	+ 6,158,159	+ 17.24
Loans and discounts:				
Agricultural	359,995,120	337,216,517	−22,778,603	− 6.33
Semiagricultural	106,505,803	104,207,690	− 2,298,113	− 2.16
Nonagricultural	237,410,342	207,492,900	−29,917,442	− 12.60
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	11,736,843	35,169,074	+23,432,231	+199.65
Semiagricultural	6,237,641	7,052,790	+ 815,149	+ 13.07
Nonagricultural	16,061,135	14,102,572	− 1,958,563	− 12.19
2. Bills payable—				
Agricultural	11,988,059	10,613,671	− 1,374,388	− 11.46
Semiagricultural	8,770,500	4,160,355	− 4,610,145	− 52.56
Nonagricultural	23,667,950	1,601,341	−22,066,609	− 93.23
Total—				
Agricultural	23,724,902	45,782,745	+22,057,843	+ 92.97
Semiagricultural	15,008,141	11,213,145	− 3,794,996	− 25.29
Nonagricultural	39,729,085	15,703,913	−24,025,172	− 60.47
Basic lines:				
Agricultural	55,376,270	39,341,075	−16,035,195	− 28.96
Semiagricultural	17,983,899	15,670,301	− 2,313,598	− 12.86
Nonagricultural	35,902,420	28,701,104	− 7,201,316	− 20.06
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	865,069	2,055,085	+ 1,190,016	+137.56
Semiagricultural	806,148	516,219	− 289,929	− 35.96
Nonagricultural	1,932,560	1,428,074	− 504,486	− 26.10
2. Bills payable—				
Agricultural	5,776,675	12,853,572	+ 7,076,897	+122.51
Semiagricultural	1,625,000	3,577,759	+ 1,952,759	+120.17
Nonagricultural	2,261,000	5,402,700	+ 3,141,700	+138.95
Total—				
Agricultural	6,641,744	14,908,657	+ 8,266,913	+124.47
Semiagricultural	2,431,148	4,093,978	+ 1,662,830	+ 68.40
Nonagricultural	4,193,560	6,830,774	+ 2,637,214	+ 62.89

Digitized by Google

TABLE 32.—*Federal reserve districts Nos. 1–12, inclusive*—Continued.

l. FEDERAL RESERVE DISTRICT NO. 12—SAN FRANCISCO.

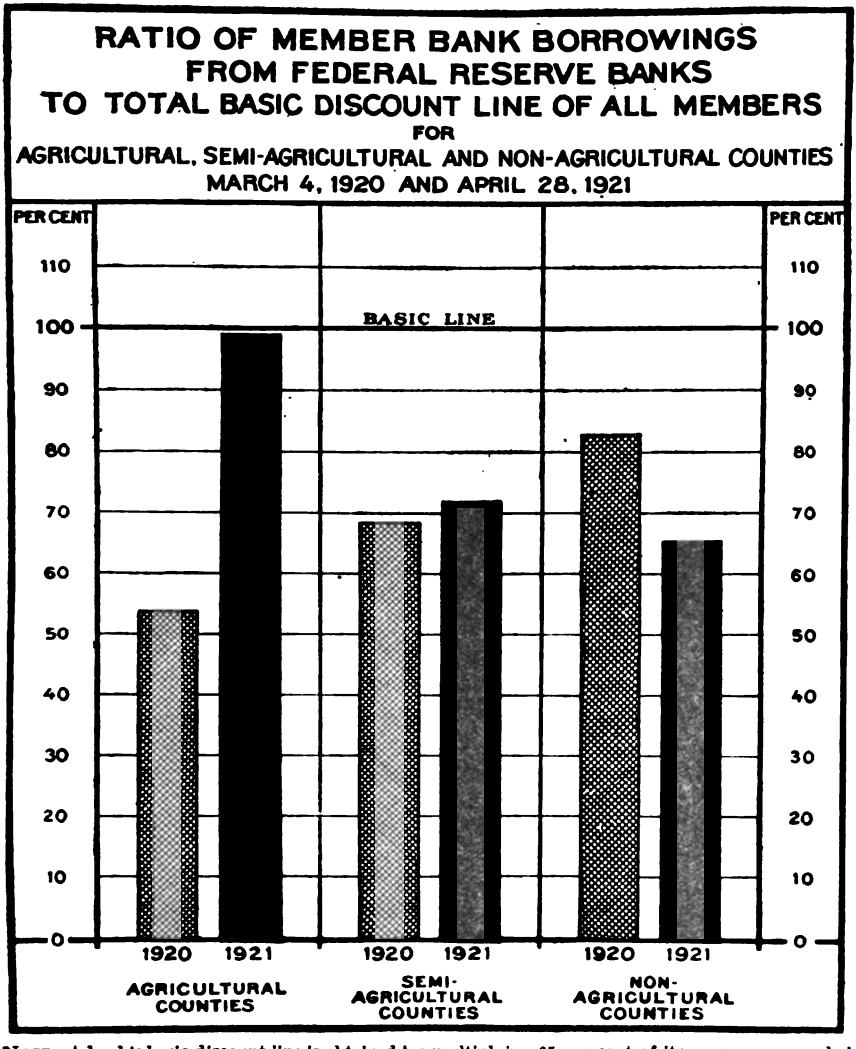
[Agricultural counties, 160; semiagricultural counties, 27; nonagricultural counties, 41.]

	May 4, 1920.	Apr. 28, 1921.	Increase or decrease.	Per cent increase or decrease.
Capital and surplus:				
Agricultural	$56,213,617	$70,173,424	+$13,959,807	+ 24.83
Semiagricultural	21,161,000	21,005,355	— 155,645	— .74
Nonagricultural	136,484,459	150,882,751	+ 14,398,292	+ 10.55
Demand deposits:				
Agricultural	293,533,708	245,021,978	— 48,511,730	— 16.53
Semiagricultural	109,999,717	86,073,661	— 23,926,056	— 21.75
Nonagricultural	635,135,007	579,064,895	— 56,070,112	— 8.83
Time deposits:				
Agricultural	131,690,101	155,099,550	+ 23,409,449	+ 17.78
Semiagricultural	50,664,036	51,995,991	+ 1,331,955	+ 2.63
Nonagricultural	520,879,478	579,440,632	+ 58,561,154	+ 11.24
Loans and discounts:				
Agricultural	357,339,094	404,449,654	+ 47,110,560	+ 13.18
Semiagricultural	128,267,386	122,812,963	— 5,454,423	— 4.25
Nonagricultural	990,295,886	972,600,149	— 17,695,737	— 1.79
Borrowings from Federal reserve bank:				
1. Rediscounts—				
Agricultural	17,190,594	32,826,073	+ 15,635,479	+ 90.96
Semiagricultural	4,514,463	6,403,344	+ 1,888,881	+ 41.84
Nonagricultural	67,800,892	74,768,067	+ 6,967,175	+ 10.28
2. Bills payable—				
Agricultural	12,027,650	18,391,380	+ 6,363,730	+ 52.91
Semiagricultural	1,153,405	2,096,900	+ 943,495	+ 81.80
Nonagricultural	37,554,800	28,990,000	— 8,564,800	— 22.81
Total—				
Agricultural	29,218,244	51,217,453	+ 21,999,209	+ 75.29
Semiagricultural	5,667,868	8,500,244	+ 2,832,376	+ 49.97
Nonagricultural	105,355,692	103,758,067	— 1,597,625	— 1.52
Basic lines:				
Agricultural	47,780,835	41,449,993	— 6,330,842	— 13.25
Semiagricultural	18,228,568	18,586,195	+ 357,627	+ 1.96
Nonagricultural	146,309,953	145,458,133	— 851,820	— .58
Borrowings from correspondents:				
1. Rediscounts—				
Agricultural	3,981,573	3,311,326	— 670,247	— 16.83
Semiagricultural	362,500	942,554	+ 580,054	+160.01
Nonagricultural	751,740	326,802	— 424,938	— 56.53
2. Bills payable—				
Agricultural	8,364,815	14,685,257	+ 6,320,442	+ 75.56
Semiagricultural	1,365,500	2,836,475	+ 1,470,975	+107.72
Nonagricultural	4,518,500	8,217,694	+ 3,699,194	+ 81.87
Total—				
Agricultural	12,346,388	17,996,583	+ 5,650,195	+ 45.76
Semiagricultural	1,728,000	3,779,029	+ 2,051,029	+118.69
Nonagricultural	5,270,240	8,544,496	+ 3,274,256	+ 62.13

Chart J on page 115 shows graphically the ratio of member bank borrowings from Federal reserve banks to total basic discount line of all members in accordance with the divisions into agricultural, semiagricultural, and nonagricultural counties used in the tabulations contained in the preceding tables:

Digitized by Google

CHART J.



NOTE—A bank's basic discount line is obtained by multiplying 65 per cent of its average reserve balance maintained with its Federal reserve bank during the preceding month plus its paid-in subscription to the capital stock of the Federal reserve bank by 2½.

The pressure of the forces of liquidation and depression may be indicated as well by a reduction of deposits as by a reduction of loans and discounts. This pressure in the agricultural counties is exhibited by a reduction of total deposits (time and demand) in these counties, as shown by the report beginning on page 101, between May 4, 1920, and April 28, 1921, of 11.1 per cent as compared with 5.2 per cent in the semiagricultural counties and 4.4 per cent in the industrial counties. This reduction is emphasized as to the agricultural counties by the fact that time deposits continued to increase during this period, except in Minneapolis and Kansas City districts. The increase or decrease in time deposits during the period May 4, 1920, to April 28, 1921, is shown by Table 33, on page 116.

Digitized by Google

TABLE 33.—*Time deposits.*

	May 4, 1920.		April 28, 1921.	
Boston:				
Agricultural	$18,379,585		$21,659,443	
Semiagricultural	9,817,259		12,244,237	
Nonagricultural	286,001,277		356,924,562	
Total		$314,198,121		$390,828,242
New York:				
Agricultural	101,676,070		130,622,890	
Semiagricultural	48,796,033		56,276,548	
Nonagricultural	710,611,341		819,785,225	
Total		861,083,444		1,006,684,663
Philadelphia:				
Agricultural	71,207,370		90,538,842	
Semiagricultural	26,431,648		31,397,672	
Nonagricultural	265,063,769		325,297,618	
Total		362,702,787		447,234,132
Cleveland:				
Agricultural	62,404,230		67,875,004	
Semiagricultural	153,122,016		170,265,748	
Nonagricultural	507,875,592		608,819,277	
Total		723,401,838		846,960,029
Richmond:				
Agricultural	103,699,419		111,529,379	
Semiagricultural	57,925,588		60,904,448	
Nonagricultural	162,611,835		180,788,780	
Total		324,239,842		353,222,607
Atlanta:				
Agricultural	50,047,357		50,683,046	
Semiagricultural	33,305,562		37,656,535	
Nonagricultural	164,884,751		160,084,644	
Total		248,237,670		248,424,225
Chicago:				
Agricultural	391,022,512		377,347,877	
Semiagricultural	146,346,494		148,037,469	
Nonagricultural	730,019,757		750,965,330	
Total		1,267,388,763		1,276,350,676
St. Louis:				
Agricultural	55,595,508		62,503,918	
Semiagricultural	17,589,772		19,412,778	
Nonagricultural	160,554,141		187,593,166	
Total		233,739,421		269,509,862
Minneapolis:				
Agricultural	235,254,371		219,090,185	
Semiagricultural	37,349,002		38,254,529	
Nonagricultural	100,719,959		111,714,098	
Total		373,323,332		369,058,812
Kansas City:				
Agricultural	110,122,718		100,808,240	
Semiagricultural	21,069,300		22,839,949	
Nonagricultural	112,664,623		119,112,424	
Total		243,856,641		242,760,613
Dallas:				
Agricultural	39,300,487		40,336,907	
Semiagricultural	17,638,809		22,970,681	
Nonagricultural	35,713,981		41,872,140	
Total		92,653,277		105,179,728
San Francisco:				
Agricultural	131,690,101		155,099,550	
Semiagricultural	50,664,036		51,995,991	
Nonagricultural	520,879,478		579,440,632	
Total		703,233,615		786,536,173
Grand total		5,748,058,751		6,342,749,762

Considering demand deposits alone, the reduction in agricultural counties during the period mentioned was 20.02 per cent as compared with 13.14 per cent in semiagricultural counties and 10.07 per

Digitized by Google

cent in the industrial counties. The total reduction of demand deposits during this period amounted to $469,452,955 in agricultural counties, with a reduction in loans and discounts during the same period of only $36,548,648.

Table 34, below, exhibits the reduction in demand deposits by districts divided in accordance with the tabulations in the report beginning on page 101 into agricultural counties, semiagricultural counties, and industrial counties. This reduction in deposits accounts in considerable measure for the increase which took place in borrowings from Federal reserve banks and city correspondents by banks in agricultural and semiagricultural counties during the period referred to:

TABLE 34.—*Decrease of demand deposits from May 4, 1920, to Apr. 28, 1921.*

	Agricultural counties.	Semiagricultural counties.	Nonagricultural counties.
Boston	23.55	11.51	12.91
New York	8.96	6.71	9.52
Philadelphia	4.55	8.20	6.92
Cleveland	11.81	2.61	1.53
Richmond	18.16	22.22	8.81
Atlanta	28.70	22.48	22.07
Chicago	19.00	18.92	12.00
St. Louis	16.59	6.76	8.38
Minneapolis	23.98	7.84	12.28
Kansas City	24.20	16.51	13.64
Dallas	27.78	12.49	23.90
San Francisco	16.53	21.75	8.83

Apparently the process which occurred and which gave rise to the conditions exhibited in these tables was that farmers in agricultural districts being unable to sell their products for enough to liquidate their bank loans, or in many cases to sell them at all, drew down their deposits to pay debts to merchants and factors and others who in turn paid wholesalers or manufacturers in the cities who in their turn liquidated their bank loans. This process, together with the liquidation of commercial loans proceeding in the industrial sections, served to produce a total reduction of bank loans and discounts in industrial counties of $827,066,081, with a reduction of total deposits of $665,700,000.

An analysis of the figures in these studies seems to justify the conclusion:

1. That the expansion of bank loans in rural districts during the period of inflation ending June, 1920, was relatively greater than in the industrial sections, taken as a whole.

2. That the action of the Federal Reserve Board and the Federal reserve banks during the 15 months preceding April 28, 1921, did not produce a greater curtailment of bank loans in the rural districts than in the financial and industrial sections.

3. Credit was not absorbed by the financial centers at the expense of rural communities for the purpose of speculative activities.

4. That the pressure of the forces of liquidation and depression in the agricultural sections was reflected in a reduction of deposits. This reduction of deposits, particularly demand deposits, was relatively larger in the agricultural and semiagricultural counties in the United States than in the industrial counties.

Digitized by Google

These conclusions are further supported by an analysis of borrowings of member banks from the Federal reserve system, made on the basis of a classification of Federal reserve districts into three divisions, as comprehended in the industrial section, the cotton section, and the agricultural and live-stock section.

The industrial section included the Federal reserve districts of Boston, New York, Philadelphia, and Cleveland; the cotton section included the Federal reserve districts of Richmond, Atlanta, and Dallas; and the agricultural and live-stock section included the Federal reserve districts of Chicago, St. Louis, Minneapolis, Kansas City, and San Francisco.

Table 35, below, shows the amount of each class of paper discounted and held by Federal reserve banks in each of these sections for the period beginning January 30, 1920, and ending May 31, 1921, with an index based on the average for 1920, showing the relative increase or decrease of each class of paper from month to month:

TABLE 35.—*Amount of agricultural paper and other classes of discounted bills held by the Federal reserve banks in the industrial, cotton, and agricultural and live-stock sections.*

[Industrial section: Boston, New York, Philadelphia, and Cleveland. Cotton section: Richmond, Atlanta, and Dallas. Agricultural and live-stock section: Chicago, St. Louis, Minneapolis, Kansas City, and San Francisco.]

[In thousands of dollars.]

	Industrial section.		Cotton section.		Agricultural and live-stock section.		Total.	
	Amount.	Per cent of 1920 average.	Amount.	Per cent of 1920 average.	Amount.	Per cent of 1920 average.	Amount.	Per cent of 1920 average.
TOTAL DISCOUNTS.								
1920—Jan. 30	1,261,780	90.2	260,704	88.7	651,873	75.5	2,174,357	85.0
Feb. 27	1,420,842	101.5	278,933	94.9	753,736	87.3	2,453,511	96.0
Mar. 26	1,399,418	100.0	256,003	87.1	793,809	91.9	2,449,230	95.8
Apr. 30	1,398,766	100.0	282,621	96.2	853,684	98.8	2,535,071	99.1
May 28	1,357,224	97.0	289,430	98.5	872,777	101.0	2,519,431	98.5
June 25	1,291,609	92.3	286,600	97.6	853,585	98.8	2,431,794	95.1
July 30	1,312,649	93.8	290,710	99.0	888,271	102.8	2,491,630	97.4
Aug. 27	1,476,719	105.5	293,302	99.8	897,106	103.9	2,667,127	104.3
Sept. 24	1,439,372	102.9	310,509	105.7	954,583	110.5	2,704,464	105.8
Oct. 29	1,525,212	109.0	330,846	112.6	945,239	109.4	2,801,297	109.6
Nov. 26	1,453,445	103.9	329,665	112.2	952,290	110.3	2,735,400	107.0
Dec. 30	1,455,678	104.0	315,920	107.5	947,536	109.7	2,719,134	106.3
Average, 1920	1,399,393	100.0	293,770	100.0	863,707	100.0	2,556,871	100.0
1921—Jan. 31	1,331,761	95.2	309,976	105.5	815,379	94.4	2,457,116	96.1
Feb. 28	1,306,177	93.3	306,429	104.3	776,904	89.9	2,389,510	93.5
Mar. 31	1,082,238	77.3	300,832	102.4	850,034	98.4	2,233,104	87.3
Apr. 30	1,008,008	72.0	289,576	98.6	778,985	90.2	2,076,569	81.2
May 31	928,046	66.3	271,838	92.5	708,029	82.0	1,907,913	74.6
AGRICULTURAL PAPER.								
1920—Jan. 30	617	66.8	1,957	8.0	20,638	34.1	23,212	27.1
Feb. 27	548	59.3	2,426	9.9	27,151	44.9	30,125	35.1
Mar. 26	603	65.3	3,392	13.9	25,326	41.9	29,321	34.2
Apr. 30	713	77.2	6,622	27.1	37,054	61.3	44,389	51.7
May 28	903	97.7	12,526	51.3	50,108	82.4	63,537	74.1
June 25	1,055	114.2	21,087	86.4	61,051	101.0	83,193	97.0
July 30	1,134	122.7	34,840	142.7	70,637	116.9	106,611	124.3
Aug. 27	1,068	115.6	42,849	175.5	73,133	121.0	117,050	136.4
Sept. 24	994	107.6	45,782	187.5	74,222	122.8	120,948	141.0
Oct. 29	1,053	114.0	42,010	172.1	88,465	146.3	131,528	153.4
Nov. 26	1,016	110.0	40,145	164.5	95,155	157.4	136,316	158.9
Dec. 30	1,380	149.3	39,293	161.0	102,471	169.5	143,144	166.9
Average, 1920	924	100.0	24,411	100.0	60,451	100.0	85,785	100.0

Digitized by Google

TABLE 35.—*Amount of agricultural paper and other classes of discounted bills held by the Federal reserve banks in the industrial, cotton, and agricultural and live-stock sections*—Continued.

[Industrial section: Boston, New York, Philadelphia, and Cleveland. Cotton section: Richmond, Atlanta, and Dallas. Agricultural and live-stock section: Chicago, St. Louis, Minneapolis, Kansas City, and San Francisco.]

[In thousands of dollars.]

	Industrial section.		Cotton section.		Agricultural and live-stock section.		Total.	
	Amount.	Per cent of 1920 average.	Amount.	Per cent of 1920 average.	Amount.	Per cent of 1920 average.	Amount.	Per cent of 1920 average.
1921—Jan. 31	1,728	187.0	38,106	156.1	100,981	167.0	140,815	164.1
Feb. 28	1,509	163.3	37,987	155.6	97,182	160.8	136,679	159.3
Mar. 31	1,541	166.8	36,960	151.4	102,484	169.5	140,985	164.3
Apr. 30	2,094	226.6	37,718	154.5	109,409	181.0	149,221	173.9
May 31	2,401	259.8	38,611	158.2	111,736	184.8	152,748	178.1
LIVE STOCK PAPER.								
1920—Jan. 30	83	10.4	3,742	32.5	29,968	44.3	33,693	42.3
Feb. 27	72	9.0	3,607	31.3	33,391	49.5	37,070	46.5
Mar. 26	111	13.9	4,633	40.2	40,600	60.2	45,344	56.9
Apr. 30	191	23.9	8,409	73.0	53,393	79.2	61,993	77.7
May 28	292	36.5	10,752	93.4	66,110	98.1	77,154	96.8
June 25	272	34.0	12,722	110.5	71,851	106.6	84,845	106.4
July 30	5,332	667.3	14,918	129.6	75,659	112.2	95,909	120.3
Aug. 27	2,426	303.6	13,977	121.4	82,825	122.8	99,228	124.4
Sept. 24	213	26.7	14,485	125.8	88,728	131.6	103,426	129.7
Oct. 29	157	19.6	16,946	147.2	92,018	136.5	109,121	136.9
Nov. 26	280	35.0	15,953	138.5	89,013	132.0	105,246	132.0
Dec. 30	158	19.8	18,040	156.7	85,596	127.0	103,794	130.2
Average, 1920	794	100.0	11,515	100.0	67,421	100.0	79,735	100.0
1921—Jan. 31	271	33.9	19,800	171.9	68,162	101.1	88,233	110.7
Feb. 28	266	33.3	19,924	173.0	63,464	94.1	83,654	104.9
Mar. 31	213	26.7	20,639	179.2	60,841	90.2	81,693	102.5
Apr. 30	268	33.5	20,867	181.2	60,052	89.1	81,187	101.8
May 31	350	43.8	19,483	169.2	56,886	84.4	76,719	96.2
ALL OTHER DISCOUNTS.								
1920—Jan. 30	296,440	58.1	69,475	61.0	293,645	67.4	659,560	62.2
Feb. 27	394,615	77.3	76,375	67.0	342,346	78.6	813,336	76.7
Mar. 26	436,295	85.5	88,846	78.0	408,409	93.8	933,550	88.1
Apr. 30	381,297	74.7	109,330	95.9	472,742	108.5	963,369	90.9
May 28	378,221	74.1	114,075	100.1	438,482	100.7	930,778	87.8
June 25	404,772	79.3	126,277	110.8	454,727	104.4	985,776	93.0
July 30	476,147	93.3	127,884	112.2	444,062	102.0	1,048,093	98.9
Aug. 27	585,091	114.6	114,878	100.8	436,050	100.1	1,136,019	107.2
Sept. 24	627,776	123.0	127,746	112.1	504,095	115.7	1,259,617	118.8
Oct. 29	734,375	143.9	142,363	124.9	480,005	110.2	1,356,743	128.0
Nov. 26	691,654	135.5	132,045	115.9	477,714	109.7	1,301,413	122.8
Dec. 30	718,372	140.7	138,290	121.3	474,498	108.9	1,331,160	125.6
Average, 1920	510,421	100.0	113,965	100.0	435,565	100.0	1,059,951	100.0
1921—Jan. 31	685,684	134.3	128,437	112.7	373,582	85.8	1,187,703	112.1
Feb. 28	689,690	135.1	124,758	109.5	356,761	81.9	1,171,209	110.5
Mar. 31	493,449	96.7	123,349	108.2	422,667	97.0	1,039,465	98.1
Apr. 30	419,582	82.2	132,122	115.9	356,805	81.9	908,509	85.7
May 31	448,623	87.9	129,120	113.3	309,959	71.2	887,702	83.7

It will be noted that all loans and discounts of all classes combined, and in all sections, and in all sections combined, reached their peak in October of 1920; that on the basis of relatives for May 31, 1921, the index had fallen for all districts combined from 109.6 to 74.6; in the industrial section the index had fallen from 109 to 66.3; in the agricultural and live-stock section from 109.4 to 82.0; and in the cotton section from 112.6 to 92.5.

In the case of agricultural paper the index of loans and discounts for all districts combined rose from January 30, 1920, to May 31, 1921,

Digitized by Google

from 27.1 to 178.1, rising in the industrial section on the basis of the index from 66.8 to 259.8; in the cotton section from 8.0 to 158.2; and in the agricultural and live-stock section from 34.1 to 184.8.

The index of loans and discounts of live-stock paper in the industrial section, rose from 10.4 on January 30, 1920, to 303.6 in August of 1920, and fell to 43.8 on May 31, 1921. It should be borne in mind that rediscounts of both agricultural and live-stock paper in the industrial section were not of sufficient volume to be indicative in either case.

In the cotton sections the index of loans and discounts of live-stock paper rose from 32.5 in January, 1920, to 181.2 in April, 1921, dropping to 169.2 in May, 1921.

In the agricultural sections live-stock paper rose as indicated by the index from 44.3 in January, 1920, to 136.5 in October of 1920, and fell to 84.4 in May, 1921.

In all districts combined the index of live-stock paper increased from 42.3 in January, 1920, to 136.9 in October, 1920, and fell to 96.2 in May, 1921.

A comparison of the tables of rediscounts of agricultural and live-stock paper with the table showing all other discounts indicates that the increase in discounts of agricultural and live-stock paper was relatively greater than the rediscounts of all other paper, and that the liquidation of discounts of agricultural and live-stock paper was relatively less than the liquidation of all other discounts.

Digitized by Google

Chapter V.

FEDERAL RESERVE POLICY AS INDICATED BY A COMPARISON OF INTEREST RATES ON CERTIFICATES OF INDEBTEDNESS, BANK ACCEPTANCES, COMMERCIAL PAPER, AND DISCOUNT RATES.

New York is the money center of the United States. Transactions in certificates of indebtedness, acceptances (foreign and domestic, trade, and bankers'), and in commercial paper center in New York. The interest rates effective in New York and the discount rates of the Federal Reserve Bank of New York, therefore, indicate the general relation between interest rates and discount rates.

Chart K, on page 122, shows the relation between the discount rate of the Federal Reserve Bank of New York and the market rate for certificates of indebtedness, bankers' acceptances, and commercial paper separately.

During the year 1920 the bank rate was consistently below the market rate for all three classes of paper, with the exception of certificates of indebtedness during the period from January–April, 1920. Since January, 1921, the bank rate has been above the rates of certificates of indebtedness and bankers' acceptances, and still remains below the market rate for commercial paper. The importance of this relationship lies in the fact that discount rates can not have great pressure, causing liquidation of loans, unless the discount rate is above the market rate; so that the profit to the banks lies in paying their indebtedness at the Federal reserve banks instead of borrowing from the Federal reserve banks to lend to their customers.

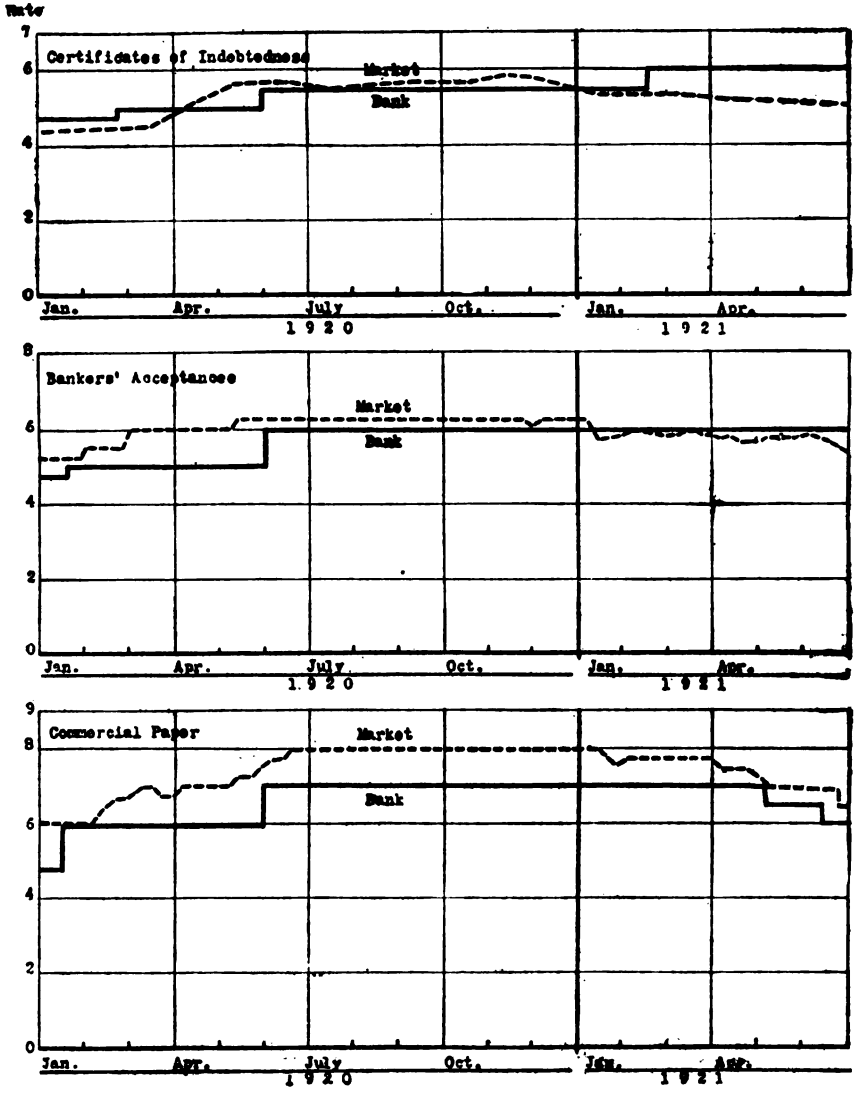
Chart L, on page 123, shows the relation between the rate of issue of certificates of indebtedness and the rate of advances on such certificates by the Federal Reserve Bank of New York:

Chart M, on page 124, and Table 36, on page 124, show the relation between the market rate and the discount rate of the Federal Reserve Bank of New York on four to six months' commercial paper.

Digitized by Google

CHART K.—DISCOUNT RATES OF THE FEDERAL RESERVE BANK OF NEW YORK AND THE MARKET RATES ON DIFFERENT TYPES OF PAPER.

[Source of information: On bank rates; annual reports and circulars of the Federal Reserve Bank of New York.]

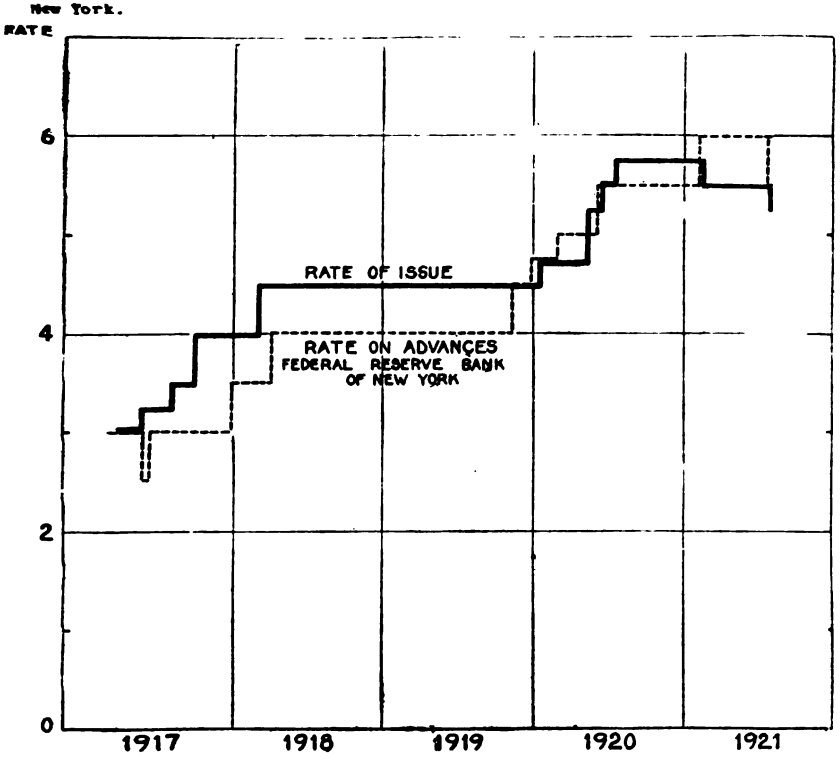


Digitized by Google

CHART L.—INTEREST RATE OF CERTIFICATES OF INDEBTEDNESS AT ISSUANCE AND RATE OF THE FEDERAL RESERVE BANK OF NEW YORK ON ADVANCES SECURED BY CERTIFICATES OF INDEBTEDNESS.

Typical interest rates at issuance of United States certificates of indebtedness (omitting longest term issues in 1920 and 1921), and the rate charged by the Federal Reserve Bank of New York on advances secured by certificates of indebtedness.

[Source of information: Annual reports and circulars, Federal Reserve Bank of New York.]



Digitized by Google

CHART M.- DISCOUNT RATE OF THE FEDERAL RESERVE BANK OF NEW YORK AND THE MARKET RATE ON COMMERCIAL PAPER.

Discount rate shown is the maximum rate on commercial paper and market rate is the prevailing selling rate for prime 4 to 6 months' paper at New York.

[Source of information: Annual reports and circulars of the Federal Reserve Bank of New York, the New York Times, and reports of dealers to the Federal Reserve Bank of New York.]

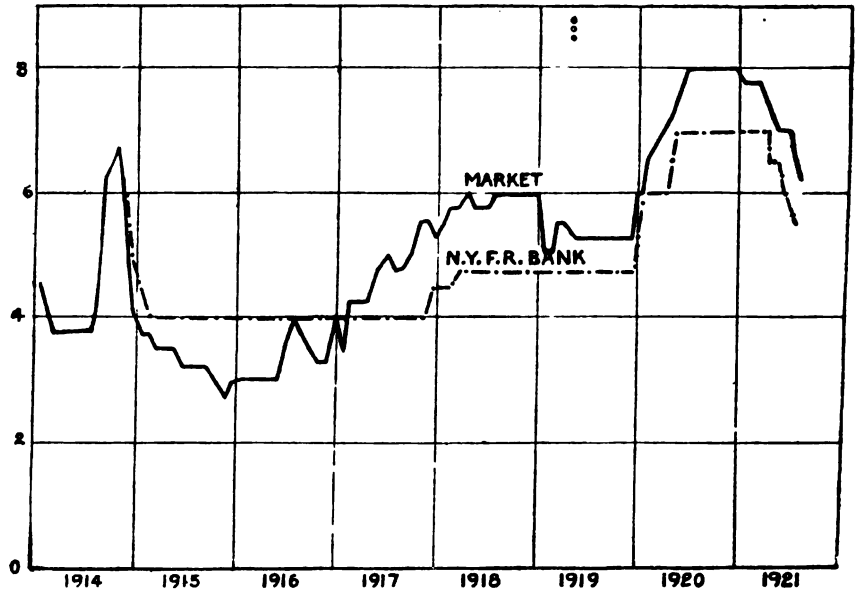


TABLE 36.—*Discount rate of the Federal Reserve Bank of New York on 60–90 day commercial paper and market rate on 4 to 6 months commercial paper in New York.*

Month.	1914		1915		1916		1917	
	Market.	Bank.	Market.	Bank.	Market.	Bank.	Market.	Bank.
January	4½	.....	3¾	4½	3	4	3½	4
February	3¾	.....	3¾	4	3	4	4¼	4
March	3¾	.....	3¾	4	3	4	4¼	4
April	3¾	.....	3¾	4	3	4	4¼	4
May	3¾	.....	3¾	4	3	4	4¾	4
June	3½	.....	3½	4	3½	4	5	4
July	4¼	.....	3½	4	4	4	4¼	4
August	6½	.....	3½	4	3¾	4	4¼	4
September	6½	.....	3½	4	3½	4	5	4
October	6½	.....	3	4	3¾	4	5½	4
November	5½	6	2¾	4	3½	4	5½	4
December	4	5	3	4	4	4	5½	4½

Month.	1918		1919		1920		1921	
	Market.	Bank.	Market.	Bank.	Market.	Bank.	Market.	Bank.
January	5½	4½	5	4½	6	6	7½	7
February	5½	4½	5	4½	6½	6	7½	7
March	5½	4½	5½	4½	6¾	6	7½	7
April	6	4½	5½	4½	7	6	7½	7
May	5½	4½	5½	4½	7½	7	7	6½
June	5½	4½	5½	4½	7½	7	6½	6
July	5½	4½	5½	4½	8	7	6½	5½
August	6	4½	5½	4½	8	7	.....	.....
September	6	4½	5½	4½	8	7	.....	.....
October	6	4½	5½	4½	8	7	.....	.....
November	6	4½	5½	4½	8	7	.....	.....
December	6	4½	6	4½	8	7	.....	.....

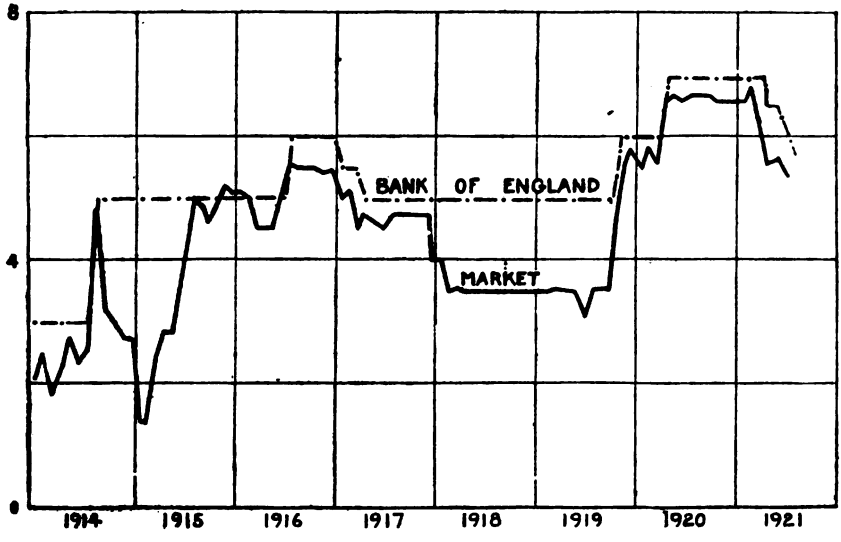
Digitized by Google

Up to our entrance into the war in April, 1917, the discount rate of the Federal reserve bank had been consistently above the market rate. After our entrance into the war the discount rate was consistently below the market rate. This relationship is entirely consistent with the general policy of a Federal reserve bank, which will induce borrowings on the part of member banks, therefore the expansion of credits.

Charts N, below, and O, on page 126, show the relation between the market rates for 90-day bills in London and the minimum discount rate of the Bank of England for the period 1914–1921 and the period 1900–1920, respectively:

CHART N.—MINIMUM DISCOUNT RATE OF THE BANK OF ENGLAND AND THE MARKET RATE ON 90-DAY BILLS IN LONDON, 1914-1921.

[Source of information: London Economist.]



When these two charts are compared with the relation between the discount rates of the Federal Reserve Bank of New York and the market rate for various kinds of paper, the fact is brought out that the Bank of England's discount rate has been uniformly higher than the market rate for 90-day bills, while the discount rate of the Federal reserve bank has been consistently below the market rate for commercial paper since the beginning of the war. (See tables 37 and 38 on pages 126 and 127.)

Digitized by Google

CHART O.—MINIMUM DISCOUNT RATE OF THE BANK OF ENGLAND AND THE MARKET RATE ON 90-DAY BILLS IN LONDON, 1900–1920.

[Source of information: Financial Review (1900–1913), London Economist (1914–1921.)]

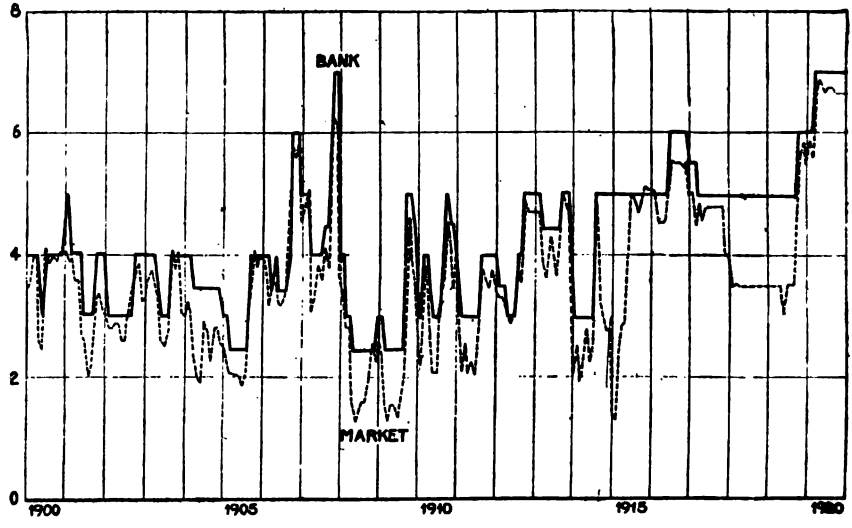


TABLE 37.—*Market rate on 90-day bank bills in London and the minimum rate of the Bank of England.*

Month.	1914		1915		1916		1917	
	Market.	Bank.	Market.	Bank.	Market.	Bank.	Market.	Bank.
January	2 1/16	3	1 7/16	5	5 1/8	5	5	5 1/2
February	2 1/8	3	1 1/8	5	5 1/16	5	5 1/16	5 1/2
March	1 7/8	3	2 1/8	5	4 15/16	5	4 15/16	5 1/2
April	2 1/16	3	2 1/4	5	4 15/16	5	4 1/2	5
May	2 1/8	3	2 1/16	5	4 15/16	5	4 1/16	5
June	3 1/8	3	4 1/8	5	5 1/8	5	4 3/16	5
July	2 1/16	3	5	5	5 1/8	6	4 1/2	5
August	4 1/8	5	4 1/16	5	5 1/8	6	4 1/2	5
September	3 1/4	5	4 1/16	5	5 1/4	6	4 1/2	5
October	3	5	4 1/4	5	5 1/4	6	4 1/2	5
November	2 1/2	5	5 1/4	5	5 1/16	6	4 1/2	5
December	2 1/4	5	5 1/8	5	5 1/2	6	4	5

Month.	1918		1919		1920		1921	
	Market.	Bank.	Market.	Bank.	Market.	Bank.	Market.	Bank.
January	4	5	3 1/2	5	5 3/16	6	6 1/8	7
February	3 1/4	5	3 1/4	5	5 1/8	6	6 1/16	7
March	3 1/16	5	3 1/16	5	5 1/8	6	6 1/2	7
April	3 1/2	5	3 1/2	5	6 1/8	7	5 15/16	6 1/2
May	3 1/2	5	3 1/4	5	6 1/8	7	5 1/16	6 1/2
June	3 1/2	5	3 1/16	5	6 1/8	7	5 3/16	6
July	3 1/2	5	3 1/16	5	6 1/16	7	.....	5 1/2
August	3 1/2	5	3 1/16	5	6 1/16	7	.....	.....
September	3 1/2	5	3 3/16	5	6 1/16	7	.....	.....
October	3 1/2	5	4 1/16	5	6 1/8	7	.....	.....
November	3 1/2	5	5 1/8	6	6 1/8	7	.....	.....
December	3 1/2	5	5 1/4	6	6 1/8	7	.....	.....

Digitized by Google

TABLE 38.—*Official discount rates of foreign State banks,*[1] *1919–1921.*

End of month.	Austria.	Belgium.	Denmark.	England.	France.	Germany.	Greece.	Holland.
1919.								
January	5	5	5½	5	5	5	.....	4½
February	5	5	5½	5	5	5	.....	4½
March	5	5	5½	5	5	5	.....	4½
April	5	5	5½	5	5	5	.....	4½
May	5	5	5½	5	5	5	.....	4½
June	5	4	5½	5	5	5	.....	4½
July	5	4	5½	5	5	5	.....	4½
August	5	4	5½	5	5	5	.....	4½
September	5	4	5½	5	5	5	.....	4½
October	5	4	6	5	5	5	.....	4½
November	5	4	6	6	5	5	.....	4½
December	5	4	6	6	5	5	.....	4½
1920.								
January	5	4	6	6	5	5	.....	4½
February	5	4	6	6	5	5	.....	4½
March	5	[2] 4½	6	6	5	5	.....	4½
April	5	5½	7	7	6	5	.....	4½
May	5	5½	7	7	6	5	6½	4½
June	5	5½	7	7	6	5	6½	4½
July	5	5½	7	7	6	5	6½	4½
August	5	5½	7	7	6	5	6½	4½
September	5	5½	7	7	6	5	6½	4½
October	5	5½	7	7	6	5	6½	4½
November	5	5½	7	7	6	5	6½	4½
December	5	5½	7	7	6	5	6½	4½
1921.								
January	5	5½	7	7	6	5	6½	4½
February	5	5½	7	7	6	5	6½	4½
March	5	5½	7	7	6	5	6½	4½
April	6	5½	7	6½	6	5	6½	4½
May	6	5	6½	6½	6	5	6½	4½
June	6	5	6½	[3] 6	6	5	6½	4½

[1] The standard commercial discount rate in Canada has been 6 per cent since before January, 1919.
[2] Apr. 1.
[3] Changed to 5½ per cent on July 22, 1921.

The following table shows the official discount rates of foreign State banks of issue 1919–1921.

TABLE 39.—*Official discount rates of central banks, 1919–1921.*

End of month.	Italy.	Japan.	Norway.	Portugal.	Rumania.	Spain.	Sweden.	Switzerland.	Federal Reserve Bank of New York.[1]
1919.									
January	5	6.5	6	5½	.....	4½	6½	5½	4½
February	5	6.5	6	5½	.....	4½	6½	5½	4½
March	5	6.5	6	5½	.....	4½	6½	5½	4½
April	5	6.5	6	5½	.....	4½	6½	5½	4½
May	5	6.5	5½	5½	.....	4½	6½	5½	4½
June	5	6.5	5½	5½	.....	4½	6	5½	4½
July	5	6.5	5½	5½	.....	4½	6	5½	4½
August	5	6.5	5½	5½	.....	4½	6	5	4½
September	5	6.5	5½	5½	.....	4½	6	5	4½
October	5	7.3	5½	5½	.....	4½	6	5	4½
November	5	8.03	5½	5½	.....	5	6	5	4½
December	5	8.03	6	5½	.....	5	6	5	4½
1920.									
January	5	8.03	6	5½	.....	5	6	5	6
February	5	8.03	6	5½	.....	5	6	5	6
March	5	8.03	6	5½	.....	5	7	5	6
April	5½	8.03	6	5½	.....	5	7	5	6
May	6	8.03	6	5½	.....	5	7	5	6
June	6	8.03	7	5½	.....	5	7	5	7
July	6	8.03	7	5½	.....	5	7	5	7
August	6	8.03	7	5½	.....	5	7	5	7
September	6	8.03	7	7	6	5	7½	5	7
October	6	8.03	7	7	6	5	7½	5	7
November	6	8.03	7	7	6	6	7½	5	7
December	6	8.03	7	7	6	6	7½	5	7
1921.									
January	6	8.03	7	7	6	6	7½	5	7
February	6	8.03	7	7	6	6	7½	5	7
March	6	8.03	7	7	6	6	7½	5	7
April	6	8.03	7	7	6	6	7	4½	7
May	6	8.03	7	7	6	6	6½	4½	6½
June	6	8.03	7	7	6	6	6½	4½	6

[1] Changed to 5½ per cent on July 21, 1921.

Digitized by Google

A comparison of the rates of discount of foreign countries and the rates of discount of the Federal Reserve Bank of New York shows that rates of discount in Denmark, England, Japan, Norway, and Spain increased before the rate of discount increased at the Federal Reserve Bank of New York.

It will be noted that the rate of discount in Japan was raised from 6.5 per cent to 7.3 per cent in October, 1919, and from 7.3 per cent to 8.03 per cent in November, 1919. These increases were coincident with the break in the silk market, which took place in Japan at that time, and the financial crisis that resulted from it.

Digitized by Google

Chapter VI.

EARNINGS OF FEDERAL RESERVE BANKS AS RELATED TO FEDERAL RESERVE POLICIES.

Fundamentally the purposes of the Federal reserve system are those of public service rather than profit, and profit or lack of profit resulting from discount rates should not be and has not been a factor in determining the rates. As indicated in another part of this report (Chapter I, page 26), the profits of the Federal reserve banks, after the payment of a 6 per cent cumulative dividend upon the stock of the member banks, are paid, either into surplus or as a franchise tax, to the Government. The incentive, therefore, to private profit in the operation of the Federal reserve banks is removed.

However, as the profits of the Federal reserve banks arise entirely from loans made to member banks, or from purchases of bills of acceptance in the open market, they increase or decrease largely in proportion to the volume of member-bank borrowings and bills purchased. Inasmuch as borrowings are largest in the periods of the greatest financial stress and demand for money, the gross profits will be largest during these periods. The borrowings were very large during 1920, and the profits in that year consequently very considerable.

Table 40, on page 130, of the profit and loss account of each Federal reserve bank for 1920 shows, in addition to the items of current expense and deductions from current net earnings, the division of net earnings between dividends, surplus, and franchise tax paid to the Government.

Digitized by Google

TABLE 40.—*Profit and loss account of each Federal Reserve Bank for 1920.*

	Boston.	New York.	Philadelphia.	Cleveland.	Richmond.	Atlanta.	Chicago.	St. Louis.	Minneapolis.	Kansas City.	Dallas.	San Francisco.	Total.
Earnings	$12,273,253	$60,525,321	$11,848,551	$14,458,619	$6,903,270	$7,476,431	$30,308,218	$7,180,117	$5,307,381	$7,409,987	$4,904,522	$12,706,668	$181,297,338
Current expenses	2,038,290	6,999,255	2,176,274	2,470,685	1,516,075	1,385,441	4,453,240	1,924,456	1,015,198	1,857,960	1,549,847	2,502,586	29,889,307
Current net earnings	10,234,963	53,526,066	9,672,277	11,987,934	5,387,195	6,090,990	25,849,978	6,255,661	4,292,183	5,552,027	3,354,675	10,204,082	151,408,031
Additions to current net earnings on account of—													
Amounts previously deducted from current net earnings for—													
Assessment account expenses of Federal Reserve Board	38,666	168,682	41,828	63,246	25,531	20,302	66,764	19,520	16,607	.....	16,167	45,964	523,277
Special reserves	.....	200,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200,000
All other	29,248	6,050	104,366	522	5,859	17	2,543	.....	.....	1,040	43	417	150,105
Total additions	67,914	374,732	146,194	63,768	31,390	20,319	69,307	19,520	16,607	1,040	16,210	46,381	873,382
Deductions from current net earnings on account of—													
Bank premises	.....	285,677	646,620	129,551	170,000	87,267	29,062	365,000	77,737	.....	.....	123,570	1,914,484
Assessment, account expenses of Federal Reserve Board	.....	.....	.....	53,900	.....	.....	.....	.....	.....	.....	.....	12,658	66,558
Reserve for depreciation—United States bonds	28,162	25,299	105,396	48,220	5,865	9,506	9,984	34,615	.....	11,579	.....	.....	278,626
Special reserves	37	456,165	.....	.....	.....	.....	.....	.....	100,000	.....	130,963	.....	687,165
All other	2,114	5,527	1,339	.....	4,214	4,212	4,490	.....	.....	807	11,691	5,412	39,806
Total deductions	30,313	772,668	753,355	231,671	180,079	100,985	43,536	399,615	177,737	12,386	142,654	141,640	2,986,639
Net deductions from current net earnings	[1] 37,601	397,936	607,161	167,903	148,689	80,666	[1] 25,771	380,095	161,130	11,346	126,444	95,259	2,113,257

Digitized by Google

Net earnings available for dividends, surplus, and franchise tax Dec. 31, 1920.....	10,272,564	53,128,130	9,065,116	11,820,031	5,238,506	6,010,324	25,875,749	4,875,566	4,131,053	5,540,681	3,228,231	10,108,823	149,294,774
Dividends paid.....	447,266	1,477,096	496,679	604,194	293,052	225,571	792,769	253,711	195,871	257,672	225,424	384,713	5,654,018
Transferred to surplus fund.....	7,351,799	[2]12,332,523	8,204,775	11,215,837	4,740,869	3,648,465	14,688,500	4,621,855	3,410,948	3,042,781	3,002,807	6,654,855	82,916,014
Franchise tax paid United States Government.....	2,473,499	39,318,511	363,662	.....	204,585	2,136,288	10,394,480	.....	524,234	2,240,228	.....	3,069,255	60,724,742

[1] Net additions.
[2] Includes $1,000,000 deducted from super-surplus account and credited to general reserve account after closing of books Dec. 31, 1920.

Digitized by Google

The total earnings of all Federal reserve banks in 1920 were $181,297,338. The net earnings applicable to dividends, surplus, and franchise tax, after payment of current expenses and other items deducted from gross earnings, were $149,294,774. Of this amount $5,654,018 was paid out in dividends, $82,916,014 was transferred to surplus, and $60,724,742 was paid to the Government as a franchise tax.

A consideration of these figures seems to justify the conclusion that profits of the Federal reserve banks bear no relation whatever to the policy of the Federal reserve banks and the Federal Reserve Board in determining rates of discount effective on borrowing of member banks.

Digitized by Google

Chapter VII.

MOVEMENT OF FUNDS IN AND OUT OF NEW YORK CITY.

The banking resources of the city of New York represent about two-fifths of the resources of all national banks and about one-fifth of the resources of all the banks in the country. New York is the financial center of the country and the money market to-day of the world. The influence of New York in both making and carrying out the banking and fiscal policy of the country is indubitably great; and it seems desirable to consider the flow of money in and out of New York in connection with the general question of whether credit or funds were drawn from the interior to the financial centers.

Chart P, on page 134, shows graphically the rise and decline of the deposits in New York City and in the country as a whole outside of New York City.

It will be noted that during 1919 the deposits of reporting banks outside of New York City rose with great rapidity from approximately $7,500,000,000 to $9,150,000,000, and maintained approximately an even level during 1920 at that figure. During 1920 the deposits of banks in New York City, however, fell $370,000,000, and by the end of that year the decline in deposits of all banks was practically accounted for by the loss in deposits in the New York City banks. During 1921 the deposits of banks outside of New York City began to decline, but at a much slower rate than in New York City. By July 13, 1921, the deposits of banks outside of New York City had fallen from approximately $9,150,000,000 to $8,750,000,000, while the deposits of banks in New York City fell from approximately $5,000,000,000 on December 31, 1920, to $4,500,000,000 on July 13, 1921.

Chart Q, page 135, shows the status from January, 1919, to July 20, 1921, of loans and investments of all reporting banks, loans and investments of reporting banks outside of New York City, and loans and investments of New York City reporting banks.

In general, this chart has the same characteristics as the one just preceding.

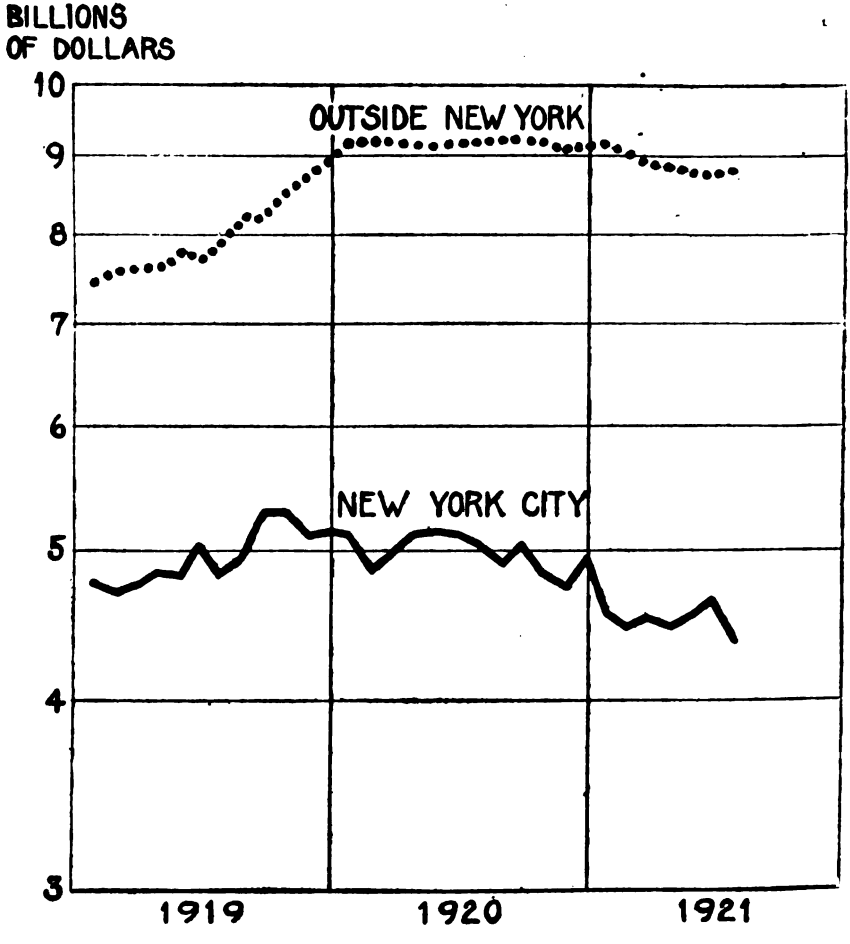
Table 41, on page 135, compares the percentage of decline from the maximum of loans and deposits, first, in the United States as a whole, and, second, in the New York City banks.

Digitized by Google

CHART P.—BANK DEPOSITS IN NEW YORK CITY AND OUTSIDE.

Total deposits of reporting banks in New York City and in the United States outside New York City, the last week of each month (logarithmic scale).

[Source of information: Federal Reserve Bulletin and Weekly Press Statements of the Federal Reserve Board.]



Digitized by Google

CHART Q—LOANS OF REPORTING BANKS IN NEW YORK CITY AND THE UNITED STATES.

Logarithmic scale.

[Source of information: Annual reports of the Federal Reserve Board, Federal Reserve Bulletin, and weekly press statements.]

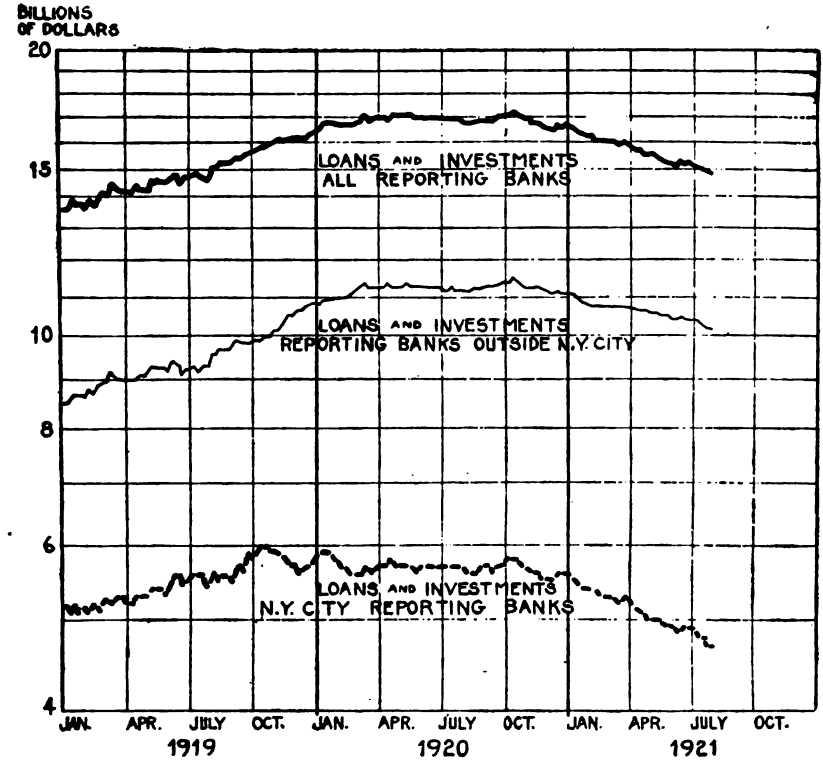


TABLE 41.—*Percentage decline from maximum.*

Date.	All districts.		New York City.		Date.	All districts.		New York City.	
	Loans.	Deposits.	Loans.	Deposits.		Loans.	Deposits.	Loans.	Deposits.
1919.					1920.				
Sept. 26				2.1	Aug. 27		3.4	5.6	10.0
Oct. 31			0.9	2.1	Sept. 24		2.4	4.3	7.1
Nov. 28			5.4	6.0	Oct. 29	1.5	3.8	5.5	10.7
Dec. 26			4.1	5.5	Nov. 26	3.2	5.6	8.0	12.7
1920.					Dec. 31	3.1	3.8	6.6	9.3
Jan. 30		2.4	4.2	5.9	1921.				
Feb. 27		4.0	6.2	10.2	Jan. 28	5.9	6.2	10.5	16.1
Mar. 26		3.3	4.9	8.6	Feb. 25	6.9	7.5	12.0	18.0
Apr. 30		2.6	4.4	5.8	Mar. 25	7.5	8.1	13.9	16.7
May 28		2.3	5.8	4.9	Apr. 27	9.7	8.9	16.5	17.5
June 25		2.1	5.3	5.5	May 25	11.2	8.8	18.6	16.8
July 30		2.7	5.9	7.4	June 29	11.4	8.6	18.5	14.7

It should be noted from this table that loans and deposits in New York City reached their peak earlier than in the country as a whole, and that the total decline of both loans and deposits has been greater proportionately in New York City than in the country as a whole.

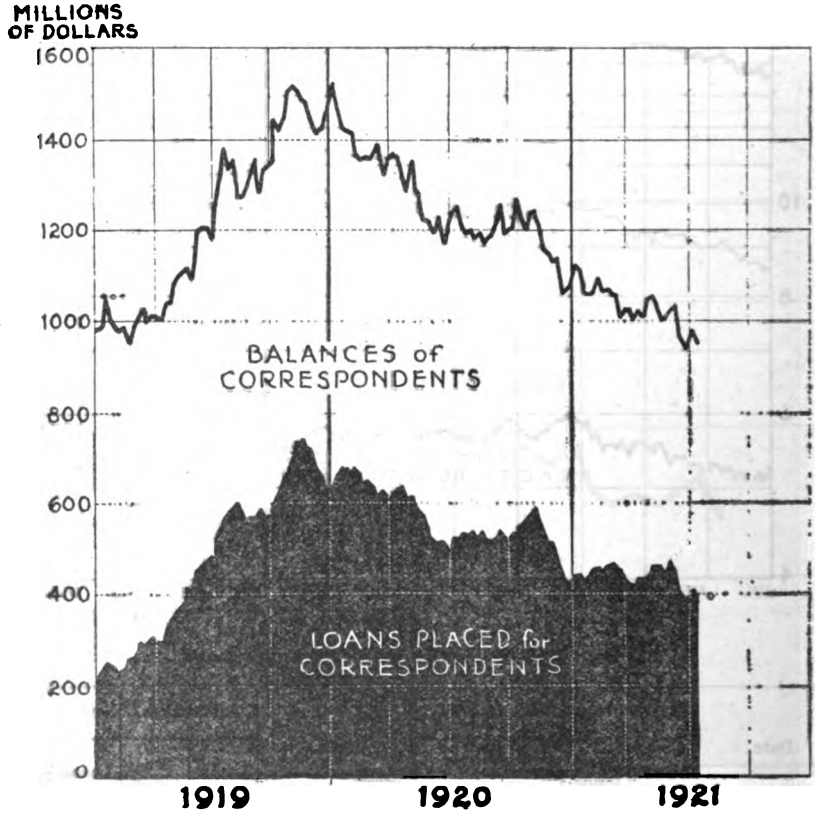
Digitized by Google

Chart R, below, shows the trend of the two large funds maintained by country banks in the city of New York, balances of out-of-town banks with New York banks, and loans placed by New York banks for out-of-town banks on call.

CHART R.—OUT-OF-TOWN FUNDS WITH 52 NEW YORK CITY BANKS.

White area shows balances of out-of-town correspondents each week in 52 New York City banks and dark area shows street loans placed by these New York City banks for out-of-town correspondents.

[Source of information: Daily reports of member banks to the Federal Reserve Bank of New York.]



During the period of business expansion and speculation in 1919, as indicated by the chart, both the balances of country banks with New York banks and the loans placed by the New York banks for country banks increased very rapidly until early in January, 1920, when the balances of out-of-town banks with New York City banks amounted to $840,000,000 and the loans placed for them on the stock exchange amounted to $680,000,000, making a total of about $1,520,000,000.

From January, 1920, to the end of the year these balances and loans decreased $450,000,000, and from January of 1921 to July 20, 1921, an additional $175,000,000.

Digitized by Google

TABLE 42.—*Balances of out-of-town correspondents and street loans placed for their account, daily reporting banks, New York City.*

Date.	Balances of out-of-town correspondents.	Loans for account of correspondents.	Total.	Date.	Balances of out-of-town correspondents.	Loans for account of correspondents.	Total.
1919.				1920.			
Jan. 3	$758,328	$219,743	$978,271	Apr. 16	$729,112	$631,726	$1,360,838
Jan. 10	753,031	232,371	985,402	Apr. 23	686,988	637,423	1,324,411
Jan. 17	798,664	250,083	1,048,747	Apr. 30	674,397	603,902	1,278,299
Jan. 24	754,374	243,551	997,925	May 7	734,940	612,984	1,347,924
Jan. 31	740,304	237,705	978,009	May 14	690,000	595,339	1,285,339
Feb. 7	744,638	235,699	980,537	May 21	693,691	582,552	1,276,243
Feb. 14	742,671	241,588	984,259	May 28	671,811	549,647	1,221,458
Feb. 21	692,957	259,231	952,188	June 4	694,284	525,078	1,219,362
Feb. 28	720,879	263,828	984,717	June 11	676,940	518,140	1,194,980
Mar. 7	725,036	280,309	1,005,345	June 18	702,109	522,549	1,224,658
Mar. 14	735,467	290,399	1,025,866	June 25	661,792	506,467	1,168,259
Mar. 21	708,552	290,291	998,843	July 2	721,438	501,173	1,222,311
Mar. 28	702,946	304,894	1,007,840	July 9	709,558	527,929	1,237,487
Apr. 4	710,898	300,479	1,011,377	July 16	728,969	519,536	1,248,505
Apr. 11	710,360	295,400	1,005,760	July 23	680,970	530,085	1,211,055
Apr. 18	720,693	319,976	1,040,669	July 30	656,397	533,568	1,191,965
Apr. 25	704,690	339,661	1,044,351	Aug. 6	671,575	530,470	1,202,045
May 2	715,406	367,057	1,082,463	Aug. 13	656,897	525,463	1,179,360
May 9	728,627	371,891	1,100,518	Aug. 20	659,126	533,259	1,192,385
May 16	738,457	383,169	1,115,626	Aug. 27	653,576	513,507	1,167,383
May 23	706,329	414,687	1,121,016	Sept. 3	675,173	513,805	1,188,978
May 29	684,909	408,795	1,093,704	Sept. 10	686,513	527,171	1,213,684
June 6	746,148	455,048	1,201,196	Sept. 17	713,989	540,546	1,254,355
June 13	738,110	466,413	1,204,523	Sept. 24	659,990	529,292	1,189,282
June 20	726,461	477,484	1,203,945	Oct. 1	678,724	522,042	1,200,766
June 27	704,209	478,168	1,182,377	Oct. 8	668,939	534,083	1,203,022
July 3	753,938	493,052	1,256,990	Oct. 15	729,698	535,868	1,264,961
July 11	771,471	536,136	1,307,607	Oct. 22	682,255	549,010	1,232,265
July 18	804,469	569,238	1,373,707	Oct. 29	642,349	559,004	1,201,353
July 25	741,085	578,651	1,319,736	Nov. 5	660,544	573,923	1,234,467
Aug. 1	785,577	588,680	1,374,257	Nov. 12	650,577	589,403	1,239,980
Aug. 8	729,437	601,057	1,330,494	Nov. 19	639,701	560,575	1,200,276
Aug. 15	763,843	590,699	1,354,542	Nov. 26	631,390	521,640	1,153,030
Aug. 22	710,799	557,934	1,268,733	Dec. 3	633,115	514,408	1,147,523
Aug. 29	693,747	575,198	1,268,945	Dec. 10	615,698	516,709	1,132,598
Sept. 5	709,773	580,874	1,290,647	Dec. 17	647,785	485,954	1,133,739
Sept. 12	723,244	594,016	1,317,260	Dec. 24	620,733	441,618	1,062,351
Sept. 19	772,026	581,390	1,353,416	Dec. 31	643,451	426,764	1,070,225
Sept. 26	705,826	577,989	1,283,815	1921.			
Oct. 3	747,737	583,805	1,331,542	Jan. 7	682,460	439,615	1,122,075
Oct 10	727,649	612,701	1,340,347	Jan. 14	677,981	445,224	1,122,455
Oct. 17	790,781	650,501	1,441,022	Jan. 21	666,709	445,040	1,111,749
Oct. 24	755,466	666,382	1,421,450	Jan. 28	625,272	431,483	1,057,355
Oct. 31	759,025	689,550	1,448,575	Feb. 4	622,614	438,036	1,060,650
Nov. 7	768,259	736,295	1,504,564	Feb. 11	605,053	456,349	1,061,402
Nov. 14	782,638	735,446	1,518,064	Feb. 18	631,189	463,908	1,095,347
Nov. 21	766,565	740,896	1,507,461	Feb. 25	616,420	450,838	1,067,258
Nov. 28	769,263	725,936	1,495,299	Mar. 4	613,958	458,772	1,072,730
Dec. 5	763,127	716,671	1,479,798	Mar. 11	599,632	463,862	1,063,494
Dec. 12	755,218	677,820	1,433,238	Mar. 18	603,319	459,031	1,062,350
Dec. 19	754,815	657,326	1,412,141	Mar. 25	556,228	451,965	1,008,193
Dec. 26	779,277	639,923	1,419,200	Apr. 1	589,955	436,347	1,025,402
1920.				Apr. 8	599,979	425,723	1,025,702
Jan. 2	820,436	634,566	1,455,002	Apr. 15	582,630	427,072	1,009,722
Jan. 9	825,476	670,474	1,495,950	Apr. 22	578,384	440,797	1,019,181
Jan. 16	838,867	681,581	1,520,448	Apr. 29	571,208	440,316	1,011,524
Jan. 23	780,592	677,785	1,458,377	May 4	603,397	447,041	1,050,938
Jan. 30	749,061	674,628	1,423,689	May 11	595,526	461,068	1,056,594
Feb. 6	746,735	661,823	1,422,058	May 18	575,489	460,765	1,036,254
Feb. 13	745,235	669,833	1,415,068	May 25	545,749	456,103	1,001,852
Feb. 20	713,842	649,919	1,363,761	June 1	570,594	434,884	1,005,478
Feb. 27	707,460	648,785	1,356,245	June 8	551,709	472,624	1,023,333
Mar. 5	720,834	638,108	1,358,942	June 15	573,125	457,756	1,030,883
Mar. 12	730,397	625,741	1,356,138	June 22	537,269	422,892	960,061
Mar. 19	748,787	636,795	1,385,582	June 29	539,035	395,280	934,295
Mar. 26	699,004	621,822	1,320,826	July 6	589,413	384,788	973,201
Apr. 2	744,387	611,567	1,355,954	July 13	557,224	408,764	965,988
Apr. 9	737,236	627,192	1,364,418	July 20	555,975	393,373	948,348

Digitized by Google

These reductions indicate a movement of money away from New York to the country sections during the period of the greatest stress for loans in the country districts, and that instead of money being drawn from the interior to New York during this period of stress, the opposite was the case.

This conclusion is fortified by an examination of the transactions of the New York Federal reserve bank through the gold settlement fund, as are indicated in Tables 43 *a*, *b*, and *c:*

TABLE 43*a*—*Gold settlement fund transactions, January to June, inclusive, 1920.*

Ordinary transactions:			
Check and wire transfers from New York		$11,346,902,000	
Check and wire transfers to New York		10,990,012,000	
Loss from New York		356,890,000	
Payments to 5 per cent fund		6,547,000	
Net balance from New York, ordinary transactions			$363,437,000
Extraordinary transactions:			
Treasurer United States—			
Transfers to New York	$304,000,000		
Transfers from New York	188,264,000		
Net balance to New York		115,736,000	
Bills, acceptances, etc.—			
Transfers to New York	408,513,000		
Transfers from New York	81,117,000		
Net balance to New York		327,396,000	
Rediscounts with other Federal reserve banks—			
Transfers to New York	215,000,000		
Transfers from New York	215,000,000		
Rediscounts for other Federal reserve banks—			
Transfers from New York	388,352,000		
Transfers to New York	352,998,000		
Net balance from New York		35,354,000	
Net balance to New York, extraordinary transactions			407,778,000
Net balance to New York, all transactions			44,341,000

TABLE 43*b*.—*Gold-settlement fund transactions, July to December, inclusive, 1920.*

Ordinary transactions:			
Check and wire transfers from New York		$11,497,721,000	
Check and wire transfers to New York		10,765,138,000	
Loss from New York		732,583,000	
Payments to 5 per cent fund		30,362,000	
Net balance from New York ordinary transactions			$762,945,000
Extraordinary transactions:			
Treasurer United States—			
Transfer to New York	$464,792,000		
Transfer from New York	141,000,000		
Net balance to New York		$323,792,000	
Bills and acceptances, etc.—			
Transfer to New York	$262,995,000		
Transfer from New York	19,074,000		
Net balance to New York		243,921,000	

Digitized by Google

Extraordinary transactions—Continued.			
Rediscounts with other Federal reserve banks—			
Transfers to New York	$160,000,000		
Transfers from New York	159,925,000		
Net balance to New York		$75,000	
Rediscounts for other Federal reserve banks—			
Transfers to New York	$122,207,000		
Transfers from New York	90,265,000		
Net balance to New York		31,942,000	
Net balance to New York, extraordinary transactions			$599,730,000
Net balance from New York, all transactions			163,215,000

TABLE 43c.—*Gold settlement fund transactions, Jan. 1, 1921–July 20, 1921.*

Ordinary transactions:			
Check and wire transfers from New York		$10,187,382.000	
Check and wire transfers to New York		9,658,277,000	
Loss from New York		529,105,000	
Payments to 5 per cent fund		80,003,000	
Net balance from New York ordinary transactions			$609,108,000
Extraordinary transactions:			
Treasurer United States—			
Transfer to New York	$649,800,000		
Transfer from New York	43,500,000		
Net balance to New York		606,300,000	
Bills and acceptances—			
Transfer to New York	60,600,000		
Transfer from New York	2,001,000		
Net balance to New York		58,599,000	
Rediscounts for other Federal reserve banks—			
Transfer from New York	221,000,000		
Transfer to New York	199,545,000		
Net balance from New York		21,455,000	
Net balance to New York, extraordinary transactions			643,444,000
Net balance to New York, all transactions			34,336,000

Tables 43 *a*, *b*, and *c*, show the transfer of funds from the second Federal reserve district (New York) to other Federal reserve districts and the movement to New York from other Federal reserve districts. For the purposes of this statement, these transactions are divided into ordinary transactions, which include the check and wire transfers necessary to pay balances on check clearings between Federal reserve districts and extraordinary transactions, which include transfers, deposits, or withdrawal of Government funds by the Treasurer of the United States from one district to another, the purchase and sale of bills, acceptances, etc., and rediscounts with other Federal reserve banks. The statement covers the period from January, 1920, to July 20, 1921.

Digitized by Google

For the entire period the result of ordinary transactions was a net loss to New York of $1,735,498,000. This net loss to New York on ordinary transactions was offset by net deposits by the Treasurer of the United States, amounting to the sum of $1,045,828,000, and the net balance in favor of New York on sales and purchases of acceptances amounting to $629,916,000.

The statement as a whole shows a distinct tendency in the direction of withdrawal of funds from New York banks through check clearances which were offset only by extraordinary transactions.

Table 44 *a* and *b* show the relation of deposits in New York banks from points outside the second reserve district (New York) to loans by New York banks to borrowers outside of the second Federal reserve district.

TABLE 44*a*.—*Loans to correspondents located outside second district and loans and investments of daily reporting banks.*

[Figures as of November 15, 1920.]

1. Loans to banks		$249,465,965
2. Loans to railroads and public service corporations		44,041,716
(*a*) Agricultural loans	$91,427,466	
(*b*) Industrial loans	796,872,155	
(*c*) All other loans	193,469,448	
3. Total of (*a*), (*b*), and (*c*)		1,081,769,069
Total loans outside second district		1,375,276,750
Total loans and investments		5,444,680,000

TABLE 44*b*.—*Deposits of correspondents located outside of second district and total borrowings from Federal reserve bank.*

[Figures as of November 15, 1920.]

1. Deposits of banks		$564,173,936
2. Deposits of railroads and public service corporations		76,837,303
(*a*) Agricultural deposits	$24,677,482	
(*b*) Industrial deposits	501,852,738	
(*c*) All other deposits	110,910,239	
3. Total of (*a*), (*b*), and (*c*)		637,440,459
Total deposits outside second district		1,278,451,698
Total borrowings from Federal reserve bank		880,640,000

The table is self-explanatory and shows in general that loans to banks, railroads, for agricultural, industrial, and other purposes outside of the second Federal reserve district, exceeded the deposits of banks, railroads, and agricultural, industrial, and other deposits from sources outside the second reserve district by $96,825,052.

In general, the accommodation received by corporations and others outside of the second Federal reserve district from banks in New York City seems to be approximately equal to the deposits contributed to New York banks by institutions and persons outside the second reserve district.

The interrelation between the rates on the New York Stock Exchange for call money and the supply of funds available for loans on the stock exchange is shown by Chart S and Table 45, on page 141.

Digitized by Google

CHART S.—STREET LOANS OF NEW YORK CITY BANKS AND THE CALL LOAN RATE.

Outstanding street loans of 52 large banks for their own account and for the account of correspondents each week compared with the average call loan renewal rate.

[Source of information: For loans, daily reports to the Federal Reserve Bank of New York; for call rate, the New York Times.]

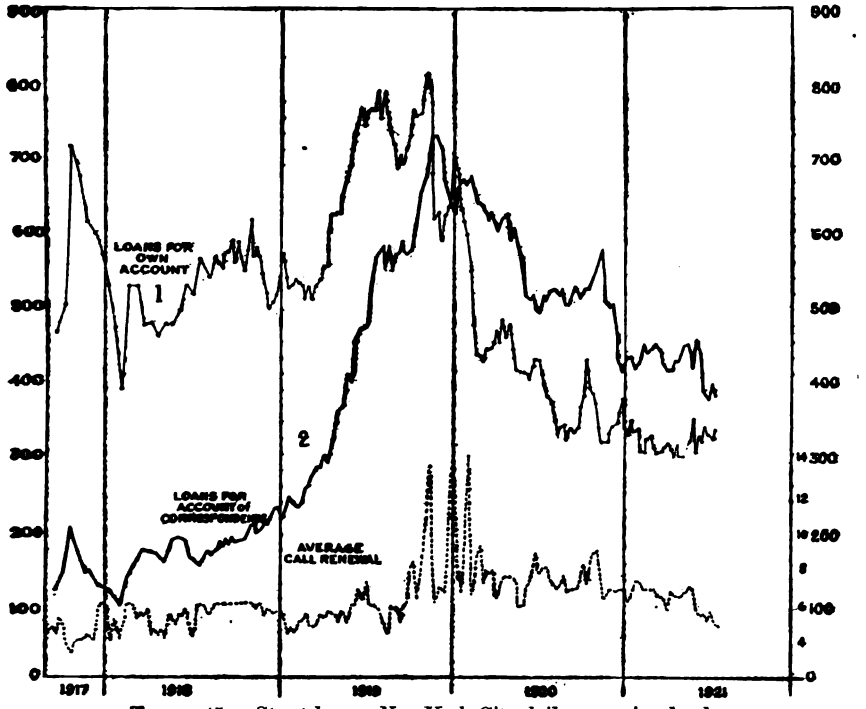


TABLE 45.—*Street loans, New York City daily reporting banks.*

[000 omitted.]

Date.	Loans for account of correspondents.	Loans for own account.	Total loans.	Date.	Loans for account of correspondents.	Loans for own account.	Total loans.
1919.				1919.			
Jan. 3	$219,743	$574,258	$794,001	July 3	$493,052	$771,782	$1,264,834
Jan. 10	232,371	542,194	774,565	July 11	536,136	770,555	1,306,691
Jan. 17	250,083	530,256	780,339	July 18	569,238	797,343	1,366,581
Jan. 24	243,551	532,983	776,534	July 25	578,651	758,611	1,337,262
Jan. 31	237,705	539,519	777,224	Aug. 1	588,680	795,689	1,384,369
Feb. 7	235,699	535,833	771,532	Aug. 8	601,057	766,073	1,367,130
Feb. 14	241,588	531,748	773,336	Aug. 15	590,699	740,854	1,331,553
Feb. 21	259,231	513,361	772,592	Aug. 22	557,934	724,714	1,282,648
Feb. 28	263,838	529,797	793,635	Aug. 29	575,198	690,918	1,266,116
Mar. 7	280,309	512,587	792,896	Sept. 5	580,874	709,869	1,290,743
Mar. 14	290,399	530,786	821,185	Sept. 12	594,016	698,327	1,292,343
Mar. 21	290,291	540,647	830,938	Sept. 19	581,390	719,652	1,301,042
Mar. 28	304,894	556,052	860,946	Sept. 26	577,989	735,035	1,313,024
Apr. 4	300,479	559,589	860,068	Oct. 3	583,805	771,206	1,355,011
Apr. 11	295,400	604,708	900,108	Oct. 10	612,071	763,988	1,376,689
Apr. 18	319,976	624,890	944,866	Oct. 17	650,501	766,792	1,417,293
Apr. 25	339,661	628,076	967,737	Oct. 24	666,382	784,954	1,451,336
May 2	367,057	629,266	996,323	Oct. 31	689,550	821,625	1,511,175
May 9	371,891	650,524	1,022,415	Nov. 7	736,295	781,971	1,518,266
May 16	383,169	679,151	1,062,320	Nov. 14	735,446	687,450	1,422,896
May 23	414,687	692,979	1,107,666	Nov. 21	740,896	627,218	1,368,114
May 29	408,795	738,197	1,146,992	Nov. 28	725,936	633,911	1,359,847
June 6	455,048	750,295	1,205,343	Dec. 5	716,671	395,416	1,312,087
June 13	466,413	771,914	1,238,327	Dec. 12	677,820	630,520	1,308,340
June 20	477,484	750,899	1,228,383	Dec. 19	657,326	641,643	1,298,969
June 27	478,168	768,065	1,246,233	Dec. 26	639,923	662,581	1,302,504

Digitized by Google

TABLE 45.—*Street loans, New York City daily reporting banks*—Continued.

[000 omitted.]

Date.	Loans for account of correspondents.	Loans for own account.	Total loans.	Date.	Loans for account of correspondents.	Loans for own account.	Total loans.
1920.				1919.			
Jan. 2	$634,566	$714,756	$1,349,322	Oct. 22	$549,010	$400,078	$949,088
Jan. 9	670,474	694,443	1,364,917	Oct. 29	559,004	393,850	952,854
Jan. 16	681,581	640,590	1,322,171	Nov. 5	573,923	380,703	954,626
Jan. 23	677,785	624,520	1,302,305	Nov. 12	589,403	346,143	935,546
Jan. 30	674,628	606,367	1,280,995	Nov. 19	560,875	326,277	887,152
Feb. 6	681,323	556,322	1,237,645	Nov. 26	521,640	326,451	848,091
Feb. 13	669,833	484,171	1,154,004	Dec. 3	514,408	337,987	852,395
Feb. 20	649,919	444,435	1,094,354	Dec. 10	516,700	346,741	863,441
Feb. 27	648,785	442,461	1,091,246	Dec. 17	485,954	352,146	838,100
Mar. 5	638,108	435,811	1,073,919	Dec. 24	441,618	365,928	807,546
Mar. 12	625,741	450,993	1,076,734	Dec. 31	426,764	387,228	813,992
Mar. 19	636,795	452,001	1,088,796				
Mar. 26	621,822	459,019	1,080,841	1921.			
Apr. 2	611,567	475,442	1,087,009	Jan. 7	439,615	346,098	785,713
Apr. 9	627,192	461,648	1,088,840	Jan. 14	445,224	335,606	780,830
Apr. 16	631,726	491,943	1,123,669	Jan. 21	445,040	356,992	802,032
Apr. 23	637,423	468,848	1,106,271	Jan. 28	431,483	340,656	772,139
Apr. 30	603,902	484,963	1,088,865	Feb. 4	438,036	344,420	782,456
May 7	612,984	451,120	1,064,104	Feb. 11	456,349	312,710	769,059
May 14	595,339	424,317	1,019,656	Feb. 18	463,908	313,143	777,051
May 21	582,552	422,889	1,005,441	Feb. 25	450,838	331,555	782,393
May 28	549,647	420,932	970,579	Mar. 4	458,772	334,583	793,355
June 4	525,078	419,756	944,834	Mar. 11	463,862	319,197	783,059
June 11	518,140	412,899	931,039	Mar. 18	459,031	312,352	771,383
June 18	522,549	429,518	952,067	Mar. 25	451,065	313,957	765,022
June 25	506,467	437,693	944,160	Apr. 1	436,347	320,714	757,061
July 2	501,173	436,978	938,151	Apr. 8	425,723	325,920	751,643
July 9	527,929	419,020	946,949	Apr. 15	427,072	317,086	744,158
July 16	519,536	404,412	923,948	Apr. 22	440,797	307,428	748,225
July 23	530,085	386,577	916,662	Apr. 29	440,318	323,327	763,645
July 30	533,568	379,260	912,828	May 4	447,041	307,531	754,572
Aug. 6	530,470	354,660	885,130	May 11	461,068	309,338	770,406
Aug. 13	525,463	337,922	863,385	May 18	460,765	320,831	781,596
Aug. 20	533,259	346,633	879,892	May 25	456,103	328,385	784,488
Aug. 27	513,507	348,993	862,500	June 1	434,884	358,471	793,355
Sept. 3	513,805	329,419	843,224	June 8	472,624	313,602	786,226
Sept. 10	527,171	344,389	871,560	June 15	457,758	338,666	796,424
Sept. 17	540,546	341,276	881,822	June 22	422,692	331,869	754,561
Sept. 24	529,292	346,408	875,700	June 29	395,260	348,709	743,969
Oct. 1	522,042	373,302	895,344	July 6	384,788	339,683	724,471
Oct. 8	534,083	390,412	924,495	July 13	408,764	332,894	741,658
Oct. 15	535,868	437,206	973,074	July 20	393,373	346,277	739,650

The chart shows that during 1919 the funds available both from out of town banks and from New York banks on call increased with great rapidity, the funds available from out of town banks increasing at a greater rate than the funds available from New York banks.

The chart also indicates the sharp decline of these funds coincident with the pressure for loans for commercial and agricultural purposes both in and out of New York which occurred in 1920.

A careful examination of the chart also shows that when funds began to be withdrawn from the stock exchange during the latter part of 1919 the interest rate which previously had run at about 6 per cent rose very sharply to 14 per cent.

The chart indicates further that it was the decline in the amount of funds available on call loans which resulted in the increase in the interest rate, rather than that it was the increase in the interest rate which resulted in drawing funds from the interior of the country to New York.

It will also be noted that during the period of 1920 and 1921, when the funds available both from New York and out of town sources

Digitized by Google

were declining, the average call renewal rate ranged higher than it had during the preceding 24 months, when funds available for loans on call were increasing.

Chart T shows the relation between loans placed by New York banks for out of town correspondents and the loans placed by New York banks for their own account.

CHART T.—STREET LOANS OF 52 NEW YORK CITY BANKS.

White area shows loans outstanding each week for their own account; and dark area, amount outstanding each week for the account of correspondents.

[Source of information: Daily reports of member banks to the Federal Reserve Bank of New York.]

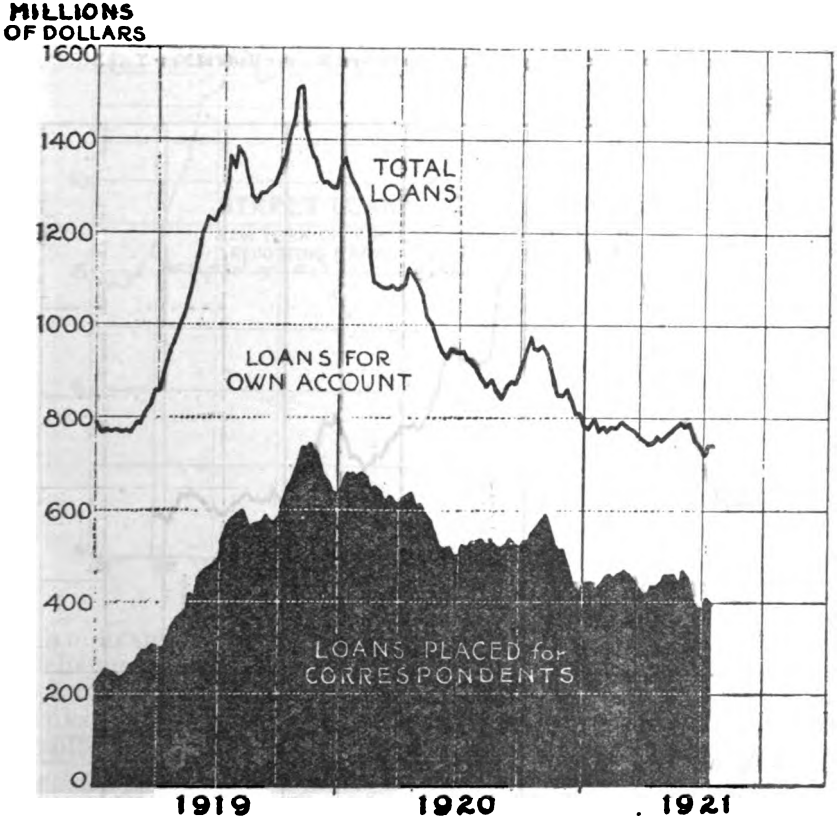


Chart U, on page 144, shows the relation of the total loans of all banks on the stock exchange and the average call-loan rate. As does Chart T, this chart shows that the increase in the average call-loan rate in most cases followed the decline in the total funds available for stock-exchange loans. It also indicates, as does Chart T, the reduction of the funds available for stock-exchange loans, which either resulted from or certainly was coincident with the pressure for commercial and industrial and agricultural loans, both in and out of New York, and the higher rates consequently offered for these types of paper.

Digitized by Google

While it is true that during the period of credit stress and great demand for loans for commercial, industrial, and agricultural purposes in 1920 the movement of moneys was out of the stock market and out of the city of New York to the country districts, it is equally true that in periods of sustained high interest rates in New York or on the stock exchange money flows from the country to New York. Money is a commodity, and like other commodities it flows to the place where it will command the highest price. This is true, whether that place be New York or somewhere else.

CHART U.—STREET LOANS OF NEW YORK CITY BANKS AND THE CALL LOAN RATE.

Total street loans of 52 New York City daily reporting banks outstanding each week and the average call loan renewal rate each week.

[Source of information: Daily reports to the Federal Reserve Bank of New York.]

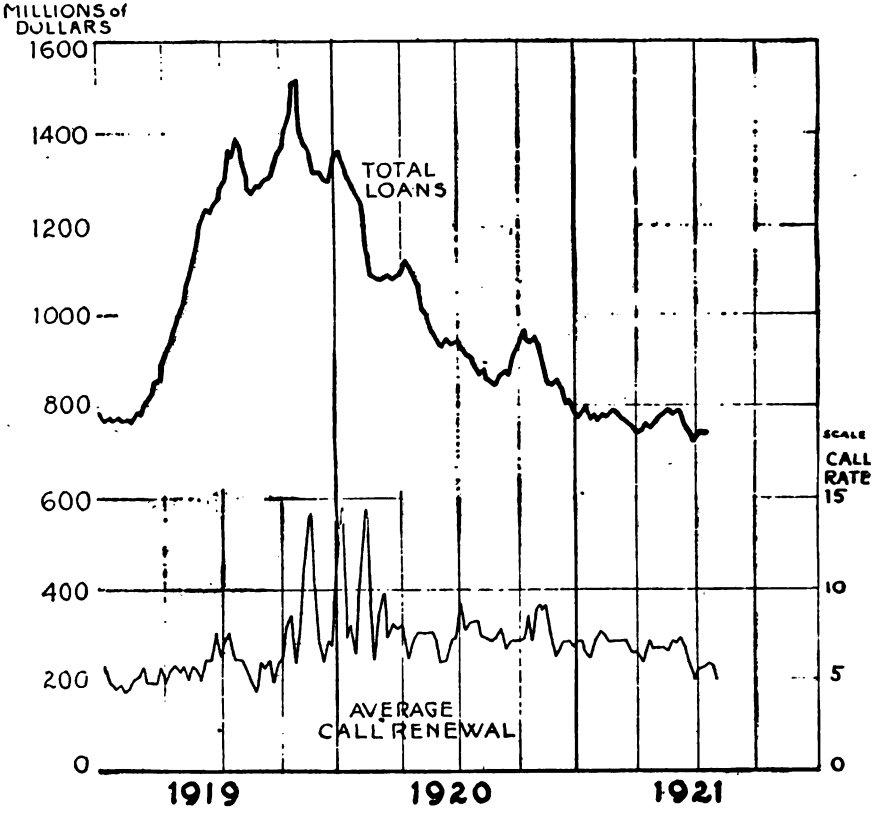


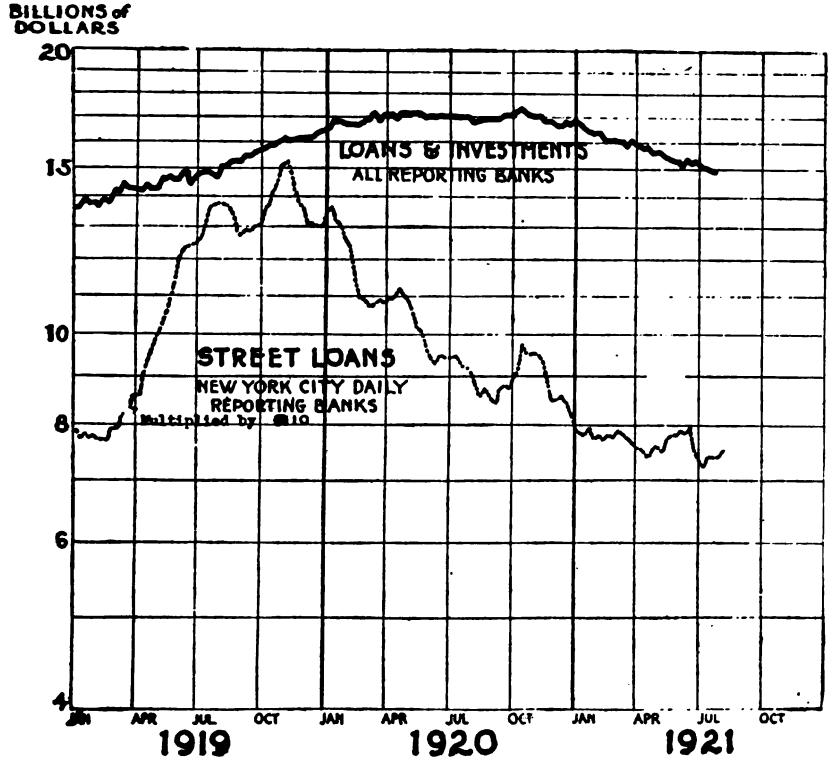
Chart V, on page 145, shows the relation between total loans and investments of all reporting banks and street loans or stock-exchange loans of all New York City daily reporting banks, which includes the amount loaned by these banks for country correspondents as well as the amounts loaned on their own account.

Digitized by Google

CHART V.—LOANS OF REPORTING BANKS IN THE UNITED STATES AND STREET LOANS OF NEW YORK CITY BANKS.

Street loans are those of 52 large banks reporting daily to the Federal Reserve Bank of New York, and include both loans for their own account and for the account of their correspondents (logarithmic scale). Street loans multiplied by 10.

[Source of information: Annual reports of the Federal Reserve Board, Federal Reserve Bulletin, weekly press statements, and daily reports of banks to the Federal Reserve Bank of New York.]



An examination of this chart shows that street loans (stock-exchange loans) decreased in amount very much more rapidly and to a much greater extent than loans and investments of all reporting banks, suggesting that the demand for loans in the country generally resulted in the withdrawal of funds from the stock exchange.

70678—H. Rept. 408, pt 2, 67-1——10

Digitized by Google

Chapter VIII.

DEFECTS AND DEFICIENCIES OF THE BANKING MACHINERY.

There are certain defects and deficiencies in the credit machinery of the country to which it seems proper to direct attention in this report. The basis of credit machinery of the country consists of 30,000 independent National and State banks. Independent banking, as compared with branch banking, is undoubtedly well adapted both to our independent commercial system and the spirit of our institutions, but it results in certain limitations upon the full use of the banking power of the country of which note must be taken. A system of independent banking makes difficult the carrying out of any uniform policy, either of liberality or of curtailment of credit. It means that the system must be subject to all of the individual differences of management and of policy of the 30,000 banks which compose the system. It makes impossible the full utilization of the resources of some banks in the locality to relieve a situation where other banks in the same locality are extended to the full limit consistent with safety to their depositors.

It is not suggested that legislation permitting branch banking in any general or universal way in the United States be enacted. The possibilities of credit control by the large financial centers of the country might constitute a menace which the commission does not believe it would be wise to encounter through permitting a general system of branch banking in this country.

A system of limited branch banking might furnish a possible solution of this problem. As the inauguration of such a system involves a reconsideration of the whole policy of independent banking in this country, the commission does not feel warranted in making a definite recommendation upon this subject but suggests that the subject be given consideration by the appropriate committees of Congress.

A further defect in the banking machinery of the country is found in the fact that about 20,000 of the independent banks of the country, representing from 35 to 40 per cent of the banking resources, are not members of the Federal reserve system. These banks are without direct access to the general reservoir of credit, consequently must rely for the expansion necessary in times of stress or business expansion upon the accommodations which it is possible to secure from their correspondents. These banks contribute little to the general reserves of the country, as those reserves are now represented principally by deposits in the Federal reserve banks. Consequently, if they are permitted to borrow either directly or indirectly from the Federal reserve banks in times of stress or business expansion they must do so at the expense of the reserves contributed by the banks which are members of the Federal reserve system.

Digitized by Google

In the newer and growing sections of the country banks are usually small; their resources, while fairly adequate to meet credit demands in normal times, do not permit of the expansion necessary in crises such as that we have just gone through. The large proportion of these small banks in the newer sections of the country are State banks, and consequently do not have direct access to the reservoir of credit represented by the lending power of the Federal reserve banks.

The outstanding deficiency of the present banking system of the country is the lack of credit machinery which can furnish credit running from six months to three years for production purposes. While it is generally considered that the farmer has an annual turnover, in reality the period of credit requirement from the beginning of the crop season to the final marketing of the crop may frequently be much longer than a year and may be as long as three years. The credit requirements of the stock raiser and breeder may begin with the initial herd, run through the period of gestation, and continue through the period of raising the offspring to maturity. The total period of credit requirement may be as long as three years. Profits come from the increase of the herd. It may be two or even three years before the initial indebtedness incurred in purchasing of the herd, or in keeping and maintaining it during the period when the increase is maturing, can be liquidated through the sale of the increase to the best advantage. Even with grain crops the farmer's turnover may require credit for a longer period than one year.

For instance, in the case of winter wheat, if fertilizer is used, contracts for fertilizer usually must be made in May preceding the fall in which winter wheat seed is sown. If the farmer does not have the cash necessary to purchase the fertilizer, credit for this purpose must be furnished. Further credit requirements may occur at the time of planting in the fall, during the growing season in the spring and summer, and in the harvesting season in July or August. It may be well along toward the following May before the crop is actually sold and the cash received for the liquidation of debts incurred.

Credit should be available on a basis of maturity which will assure the farmer that he will not be pressed for payment before his product is ready for the market and until he can sell it at what is, in his judgment, the best advantage. Any banking system which requires the producer to produce continuously under the disadvantage of pressure to liquidate his borrowings at a time when his product is not ready for the market or when the market is already overstocked is clearly inadequate.

It is imperatively necessary, if the farmer's credit requirements are to be fully met, that permanent machinery be established, or at least that such modifications of existing machinery be made as will provide credit for a period of from six months to three years, to fill the gap between short-time credit now furnished by the National, State, and commercial banking system, and the long-time credit only partly furnished by those systems and largely furnished by farm mortgage institutions and the Federal farm-loan system.

In addition to providing for the cash necessary for production and marketing the farmer's crops and live-stock, credit must be furnished to enable him to pay cash for fertilizer and other expenses incident to production. The farm-loan system at present affords

Digitized by Google

means of furnishing long-time credits upon the security of first mortgages upon farm lands. As specified in the farm loan act, these loans may be made to provide for the purchase of land for agricultural purposes, to provide for the purchase of equipment, fertilizers, and live stock, to provide buildings and improvements on farm lands, and to liquidate existing indebtedness of the owner of the mortgaged land or indebtedness subsequently incurred for any of the above-described purposes.

While it is conceivable that a farmer might, under the terms of the farm loan act, procure a loan for a period of six months or a year for the purpose of purchasing fertilizer, for instance, a study of the nature of the purposes for which mortgage loans are permitted under the terms of that act makes it clear that it was not contemplated that farmers should procure credit upon the security of land mortgages to fulfill their immediate credit requirements for the purpose of producing and marketing each individual crop. It may be properly assumed that the present facilities of the farm loan act are practically, if not legally, limited to longer-time loans for purposes of a more or less permanent nature, such as those specifically enumerated in the act itself. Even it it were possible to fully provide for the farmer's credit requirements on the basis of farm mortgages, it would obviously not be desirable to do so.

The Federal reserve system, on the other hand, was created for the purpose of establishing Federal reserve banks which shall act as the central reservoirs of the commercial banking reserves of the country. Appreciating the necessity of maintaining these reserves against commercial bank deposits in the most liquid form, Congress limited the rediscount powers of the Federal reserve banks primarily to commercial, industrial, or agricultural paper of short maturity. A general limitation of 90 days was placed upon all such paper, with the express exception, however, that notes, drafts, and bills drawn for agricultural purposes, or based on live stock, and having a maturity not exceeding six months, might be discounted in a limited amount. The 90-day limit imposed upon commercial and industrial paper is generally sufficient to cover the needs of commerce and industry, since the greater bulk of their requirements come within that period. So, also, the exception to this limit in favor of six months' agricultural paper is sufficient to permit of the rediscount of the short-time borrowings of the farmer for temporary purposes. But loans represented by credits running from six months to three years, the period for which credit is required by the farmer to finance both the production and orderly marketing of his crop, including the breeding and fattening of live stock, are not eligible for discount by Federal reserve banks. It is the very essence of the proper functioning of the Federal reserve system and the protection of its note issue that the assets of the Federal reserve banks be confined to investments of a self-liquidating nature and of these shorter maturities.

Existing machinery not being sufficient to insure that the farmer will obtain all of the credit legitimately required for his purposes, the commission is of the opinion that in order to provide effective means of bridging the present gap it will be necessary to procure further Federal legislation. In no other manner will it be possible to establish a credit machine sufficiently comprehensive and promptly

Digitized by Google

enough to meet the requirements not only of the large farm borrower but also the small farm borrower with limited assets.

While the investigations of the commission have disclosed the fact that the farmer at the present time has facilities for procuring short-time credit that will permit the planting and possibly the producing of a crop, and to some extent in marketing it, any system which provides credit on a basis of maturity shorter than the period necessary to produce and market a crop is clearly inadequate.

It is not enough that the producer of the crop might possibly be able to get a renewal of his original production credit, he must have the assurance when he first seeks the credit to produce his crop that if he so desires that credit will be of sufficient length to carry him through the period of orderly distribution as well as production.

A bill to provide the essential credit needs of the farmer should contain the following provisions:

1. That the Federal farm-loan act be amended so as to permit the Federal land banks to rediscount paper representing loans upon which money has been advanced to farmers which has been used or is to be used for agricultural purposes, having a maturity of not less than six months nor more than three years, for national banks, State banks, and trust companies, savings institutions and incorporated live stock loan companies, and also to permit direct loans by the Federal land banks to cooperative associations of farmers organized under State laws secured by warehouse receipts upon staple agricultural products.

2. It is recommended that Federal farm land banks be permitted to establish separate departments for the purpose of issuing short-time debentures having a maturity of not more than three years, secured by loans of the kinds described in paragraph 1 above.

In view of the fact that these short-time debentures will be materially different from the long-time bonds now issued by the farm land banks and will appeal to a different market, it is essential that the farm land banks should establish separate departments for the purpose of issuing these short-time debentures. That will preclude the possibility of a confusion of either the character or collateral of the long-time bonds and the short-time debentures. Necessary capital for the separate department in the land bank so established shall be furnished from the Federal Treasury.

3. As the rates of interest on short-time loans will in all likelihood differ from the rate of interest on the long-time loans made by farm land banks, because of their maturity, it should be understood that the rates of interest on the loans recommended in paragraph 1 hereof, and the rates of interest on the short-time debentures covering those loans need not necessarily coincide with the rates of interest on farm land mortgages and farm land bonds covering those mortgages made or issued by farm land banks.

4. That the Federal reserve act be amended, if necessary, so as to permit Federal reserve banks to purchase debentures issued under the terms of this amendment under the same terms and conditions as now govern the purchase of farm loan bonds by Federal reserve banks.

5. That the Federal reserve act be amended so as to permit Federal reserve banks to rediscount for Federal land banks or joint-stock

Digitized by Google

land banks, with their indorsement, any loans made under the terms of paragraph 1 hereof, when within a maturity of six months.

The farm land banks, not having any large fixed capital, must necessarily turn to the investment market for the sale of their bonds or debentures in order to provide working capital with which to make new loans. In view, however, of the seasonal nature of the requirements of the agricultural interests, it would not be practicable to require the farm land banks to borrow in this manner the amounts necessary to satisfy the demands of the farmers at their peak. For that reason it is believed that it is desirable, if not necessary, to permit the Federal reserve banks to rediscount for farm land bank loans made upon the security of agricultural products in the manner described in paragraph 1 hereof whenever these loans come within a maturity of six months. They will then be of a character and maturity of the kind which Federal reserve banks are now authorized to rediscount for their member banks. It is not believed that it will be advisable or necessary to permit farm land banks to become members of the Federal reserve system in order to afford them this one facility, and, because of their limited working capital, the commission does not recommend that they be required to make any deposit with the Federal reserve bank as a prerequisite to their right to apply for the rediscount of any of the loans herein referred to.

If these recommendations of the commission are approved by Congress, the result will be an extension of the powers of present existing agencies in such manner as will best be calculated to grant to the farmer immediate and effective credit facilities for that intermediate period for which there is not now sufficient available credit. The approval of these recommendations will, it is believed, effectively and safely bridge the present gap in the two kinds of credit without the necessity of establishing any new or untried machinery and without sacrificing any of the fundamental principles upon which both the farm loan system and the Federal reserve system must rest.

Digitized by Google

Chapter IX.

STATISTICAL TABLES SHOWING MOVEMENT OF MONEY AND CREDIT.

Table 47, on page 154, gives the data from which the major portion of the statistics with respect to expansion and contraction of loans and discounts, deposits of Federal reserve banks and Federal reserve notes, and of the general stock of money in the United States, and of loans and discounts and deposits of National and State banks and trust companies are taken. It is intended to give a complete picture of the movement of credit and currency in the Federal reserve system and in National and State banks and trust companies, exclusive of savings banks, during the entire period the Federal reserve system has been in operation.

Digitized by Google

TABLE 46.—*Per cent of increase from year to year, in Federal reserve notes in circulation, general stock of money in United States, gold in excess of reserves required, total bills discounted and bills bought, loans and discounts, and deposits, 1913 to 1921.*

	Federal reserve notes in circulation.	General stock of money in United States.	Gold in excess of reserves required, "Free gold."	Total bills discounted and bills bought.	Loans and discounts.				Deposits.			
					National banks.	Member State banks and trust companies.	Nonmember banks and trust companies.	All banks.	National banks.	Member State banks and trust companies.	Nonmember banks and trust companies.	All banks.
1921 over 1920	−15.0	3.4	278.9	−36.3	−18.2		[1] −7.2	−12.7	5.4		[1] −4.9	−0.02
1920 over 1919	24.7	2.8	−57.0	33.3	23.6	34.1	19.9	24.7	14.8	22.2	10.5	15.1
1919 over 1918	45.1	14.7	−22.7	95.4	8.7	42.5	4.9	12.9	11.0	39.3	11.1	16.5
1918 over 1917	238.5	21.9	13.4	171.8	13.1	[2] 10.3		11.8	15.1	[2] 8.1		11.4
1917 over 1916	234.2	24.0	97.3	332.9	16.6	[2] 18.4		17.5	19.6	[2] 17.8		18.6
1916 over 1915	110.0	11.5	49.1	153.7	15.3	[2] 19.4		17.2	23.1	[2] 26.8		25.1
1915 over 1914		3.8			3.6	[2] 2.5		3.0	3.9	[2] 4.4		4.1
1914 over 1913					4.3	[2] 5.4		4.8	6.8	[2] 7.7		7.4

[1] Includes both member and nonmember State banks and trust companies.

[2] State banks and trust companies.

Using pencil loans and discounts and deposits for 1921, the per cents of 1921 over 1920 are as follows:

National banks—

Loans and discounts..... −18.2

Deposits..... +05.8

Digitized by Google

The percentages in Table 46, on page 152, are calculated from the figures in Table 47, on page 154, and indicate the percentage of increase or decrease from June 30 to June 30 of each year, beginning June 30, 1913, and ending June 30, 1921, in Federal reserve notes in circulation, the general stock of money in the United States, free gold, total bills discounted and bills bought by Federal reserve banks, loans and discounts of national banks, member State banks and trust companies and nonmember State banks and trust companies, exclusive of savings banks, and also deposits of national banks, member State banks and trust companies, nonmember State banks and trust companies, exclusive of savings banks.

Digitized by Google

TABLE 47.—*Statistics of money and credit, 1914–1921.*

[In thousands, i. e., 000 omitted, except in per cent column.]

	Federal reserve system.											
	Net deposits.		Federal reserve notes in circulation.		Total net deposits and Federal reserve note liabilities.	Total amount of reserve required.	Total cash reserve held.	Gold in excess of reserves required (free gold).	Ratio total cash reserves to net deposits and Federal reserve note liabilities combined.	Total bills discounted.	Bills bought in open market.	Total bills discounted and bills bought.
	Amount.	Required reserve of 35 per cent.	Amount.	Required reserve of 40 per cent.								
1914.									*Per cent.*			
December	$263,948	$92,381	$10,608	$4,243	$274,556	$96,624	$267,901	$171,277	97.5	$10,593	.....	$10,593
1915.												
March	288,217	100,875	33,767	13,506	321,984	114,381	296,235	181,854	92.0	22,001	$9,682	31,683
May	292,050	104,217	57,847	23,138	349,897	127,355	330,320	202,965	94.4	24,747	9,204	33,951
June	311,349	108,972	72,489	28,995	383,838	137,967	372,031	234,064	96.9	25,996	10,379	36,375
September	329,941	115,479	115,662	46,264	445,603	161,743	428,324	266,581	96.1	31,373	13,058	44,431
November	397,952	139,283	165,304	66,121	563,256	205,404	529,375	323,971	93.9	32,794	16,179	48,973
December	400,012	140,004	189,026	75,610	589,038	215,614	555,938	340,324	94.2	32,368	23,013	55,381
1916.												
March	419,987	146,995	163,066	65,226	583,053	212,221	524,459	312,238	89.9	21,267	40,408	61,675
May	476,680	166,838	159,389	63,755	636,069	230,593	537,227	306,634	84.4	20,365	52,708	73,073
June	457,503	160,126	152,244	60,897	609,747	221,023	570,192	249,169	93.5	21,188	71,095	92,283
September	521,740	182,609	196,538	78,615	718,278	261,224	592,578	331,354	82.4	25,953	80,625	106,578
November	637,072	222,975	240,448	96,179	877,520	319,154	719,475	400,321	81.9	20,501	102,092	122,593
December	668,786	235,075	275,353	110,141	944,139	345,216	757,111	411,895	81.4	30,196	127,497	157,693
1917.												
March	706,905	247,107	357,610	143,044	1,064,515	390,461	947,328	556,867	89.0	20,106	84,473	104,579
May	721,171	252,409	454,402	181,761	1,175,573	434,170	1,014,263	580,093	86.2	47,587	107,377	154,964
June	1,261,800	441,630	508,753	203,501	1,770,553	645,131	1,334,352	689,221	75.4	[2]197,242	202,270	399,512
September	1,193,896	417,860	700,212	280,085	1,894,098	697,945	1,457,559	759,614	76.9	[2]233,539	176,169	409,708
November	1,595,512	558,429	1,056,983	422,793	2,652,495	981,222	1,676,211	694,989	69.0	[2]756,398	205,454	961,852
December	1,457,994	510,298	1,246,488	498,595	2,704,482	1,008,893	1,720,768	711,875	63.6	[2]680,706	275,366	956,072
1918.[1]												
March	1,535,367	537,378	1,452,838	581,135	2,988,205	1,118,513	1,874,063	755,550	62.7	583,228	304,065	887,293
May	1,586,608	555,313	1,600,968	640,387	3,187,576	1,195,700	1,975,709	780,009	62.0	897,357	256,373	1,153,730
June	1,529,819	535,437	1,722,216	688,886	3,252,035	1,224,323	2,006,199	781,876	61.7	869,175	216,848	1,086,023

Digitized by Google

August	1,572,898	550,514	2,092,708	837,083	3,665,606	1,387,597	2,066,962	679,365	56.4	1,428,195	232,603	1,660,798
November	1,668,283	583,899	2,568,676	1,027,470	4,236,950	1,611,369	2,120,371	509,002	50.0	1,815,195	375,341	2,190,536
December	1,552,892	543,502	2,685,244	1,074,098	4,238,136	1,617,600	2,146,219	528,619	50.6	1,702,938	303,673	2,006,611
1919.[1]												
March	1,741,425	609,499	2,521,776	1,008,710	4,263,201	1,618,209	2,210,524	592,315	51.9	1,886,240	248,107	2,134,347
May	1,830,920	640,822	2,519,202	1,007,717	4,350,212	1,648,539	2,255,106	606,567	51.8	1,969,302	183,650	2,173,042
June	1,750,694	612,743	2,499,180	999,672	4,249,874	1,612,415	2,216,256	603,841	52.1	1,818,040	304,558	2,122,598
September	1,634,074	571,926	2,655,354	1,062,142	4,289,428	1,634,068	2,187,505	553,437	51.0	1,882,282	342,491	2,224,773
November	1,889,399	661,289	2,852,277	1,140,911	4,741,676	1,802,200	2,159,666	357,466	45.5	2,214,209	495,595	2,709,804
December	1,704,470	596,565	3,057,646	1,223,058	4,762,116	1,819,623	2,135,536	315,913	44.8	2,194,878	585,212	2,780,090
1920.[1]												
February	1,884,576	659,602	3,019,984	1,207,994	4,904,560	1,867,596	2,083,215	215,619	42.5	2,453,511	531,367	2,984,878
May	1,794,440	628,054	3,107,021	1,242,808	4,901,461	1,870,862	2,092,496	221,634	42.7	2,519,431	418,600	2,938,031
June	1,722,223	602,778	3,116,718	1,246,687	4,838,941	1,849,465	2,108,605	259,140	43.6	2,431,794	399,185	2,830,979
September	1,658,464	580,462	3,279,996	1,311,998	4,938,460	1,892,460	2,151,594	259,134	43.6	2,704,464	307,624	3,012,088
November	1,623,641	568,274	3,325,538	1,330,215	4,949,179	1,898,489	2,195,310	296,821	44.4	2,735,400	247,703	2,983,103
December	1,604,190	561,467	3,344,686	1,337,874	4,948,876	1,899,341	2,249,163	349,822	45.4	2,719,134	255,702	2,974,836
1921.												
February	1,705,253	.....	3,048,554	.....	4,831,176	1,903,925	2,363,475	559,550	50.1	2,396,254	170,503	2,566,757
April	1,666,509	.....	2,844,011	.....	4,576,225	1,743,879	2,505,612	761,733	54.8	2,063,739	103,609	2,167,348
June	1,603,845	.....	2,648,086	.....	4,328,303	1,645,560	2,627,494	981,934	60.8	1,771,562	31,601	1,803,163
July	1,638,637	.....	2,537,617	.....	4,176,254	1,588,567	2,685,296	1,096,729	63.4	1,650,496	19,424	1,669,920

[1] Figures as of last week in month.
[2] Includes "Bills discounted secured by Government war obligations" from June until December, 1917.

Digitized by Google

TABLE 47.—*Statistics of money and credit, 1914–1921*—Continued.

	General stock of money in United States.	Money in circulation outside Treasury and Federal reserve system.	All banks, national, State, and trust companies.							
			Loans and discounts.				Deposits.			
			Member banks.		Nonmember banks.	Total.	Member banks.		Nonmember banks.	Total.
			National banks.	State banks and trust companies.	State banks and trust companies.	All banks.	National banks.	State banks and trust companies.	State banks and trust companies.	All banks.
1914.										
January	$3,775,464		$6,175,405				$6,178,606			
March	3,767,922		6,357,536				6,201,279			
June	3,779,052		6,430,069		[3]$5,813,290	$12,243,359	6,359,188		[3]$7,166,600	$13,525,788
September	3,819,916		6,400,767				6,236,420			
October	4,037,736		6,316,478				6,179,871			
December	4,031,485		6,347,637				6,346,362			
1915.										
March	3,897,886	$3,178,203	6,499,965				6,348,890			
May	3,911,292	3,220,401	6,643,888				6,661,581			
June	3,923,077	3,242,450	6,659,971		[3] 5,956,692	12,616,663	6,611,282		[3] 7,482,368	14,093,650
September	4,061,659	3,323,874	6,756,680				6,762,183			
November	4,249,105	3,459,944	7,233,929				7,446,175			
December	4,329,306	3,481,464	7,357,732				7,641,259			
1916.										
March	4,381,853	3,548,595	7,490,011				7,716,379			
May	4,368,038	3,566,215	7,606,428				8,136,018			
June	4,374,966	3,539,567	7,679,167		[3] 7,113,349	14,792,516	8,143,048		[3] 9,494,749	17,637,797
September	4,580,412	3,679,211	7,913,231				8,445,649			
November	4,780,278	3,807,884	8,394,338				9,139,134			
December	4,850,048	3,834,330	8,395,253				9,003,042			
1917.[1]										
March	5,146,178	3,916,472	8,761,930				9,273,700			
May	5,414,961	4,117,215	8,809,706				9,696,459			
June	5,425,417	4,152,831	8,957,678		[3] 8,423,246	17,380,924	9,743,755		[3] 11,188,113	20,931,868
September	5,553,661	3,940,020	9,224,682				10,185,747			
November	5,823,854	4,035,464	9,782,740				11,690,819			
December	6,026,128	4,131,187	9,866,252	$2,515,164			11,251,992	$3,740,373		

Digitized by Google

1918.[1]										
March	6,351,543	4,193,495	9,560,762				11,187,587			
May	6,540,955	4,310,168	9,729,249	2,992,400			11,497,819	4,365,707		
June	6,615,008	4,282,889	10,135,842	3,153,726	6,143,295	19,432,863	11,219,526	4,456,546	7,642,420	23,318,492
August	6,895,090	4,449,836	10,096,807				10,999,823			
November	7,590,173	5,065,653	10,726,094	3,882,833			12,150,214	5,230,639		
December	7,669,577	5,129,985	10,420,301	3,858,722			12,247,826	5,373,454		
1919.[1]										
March	7,564,300	4,851,420	10,080,083	3,870,827			11,802,368	5,590,925		
May	7,614,749	4,845,591	10,253,024				12,363,330			
June	7,592,079	4,808,913	11,010,206	4,494,656	6,445,167	21,950,029	12,457,925	6,211,276	8,497,149	27,166,350
September	7,563,706	4,853,059	11,526,372				13,191,470			
November	7,721,561	5,033,910	12,240,718	5,317,274			14,097,133	6,982,995		
December	7,783,144	5,172,223	12,759,726	5,576,122			14,517,040	7,505,390		
1920.[1]										
February	7,762,854	5,128,059	13,091,032				13,656,729			
May	7,755,954	5,290,872	13,502,756	5,845,866			13,984,964	7,310,301		
June	7,804,528	5,353,146	13,611,416	6,027,030	7,729,785	27,368,231	14,311,401	7,582,238	9,390,850	31,284,469
September	7,997,081	5,479,682	13,706,066				13,960,290			
November	8,254,949	5,617,350	13,764,721	6,178,083			14,313,129	7,552,246		
December	8,281,589	5,584,004	13,526,936	6,108,220			13,732,037	7,393,314		
1921.										
February	8,171,238	5,233,106	12,824,914				13,075,060			
April	8,082,774	5,051,084	12,356,630	6,157,594			12,746,527	7,385,507		
June	8,073,737	5,011,807	12,004,515		[4] 12,757,414	24,761,929	15,142,331		[4] 16,135,093	31,277,424
July	8,024,423	4,866,273								
August	7,988,397									

[1] Figures as of last week in month.
[3] Includes both member and nonmember State banks and trust companies.
[4] Includes both member and nonmember State banks and trust companies.

Digitized by Google

Chapter X.

MINORITY OPINION OF OGDEN L. MILLS.

I concur in the report with one exception. I can not agree with the statement that late in the year 1920 "a change in the policy of the Federal reserve system with reference to discount rates would have accomplished a reversal in part of the psychological and economic factors which at this time were moving in the direction of lower prices." Such a suggestion is out of harmony with the balance of the report and inconsistent with the facts brought out by our investigation.

Higher rediscount rates charged by Federal reserve banks did not produce the break in prices, and it is inconceivable that their reduction could have counteracted the economic forces that were leading to inevitable deflation:

(1) Federal rediscount rates were below market rates throughout the year 1920.

(2) There are some 28,210 banks in the United States, only 9,840 of which are members of the Federal reserve system. Any number of these banks are to a great extent free from competition, and charge rates largely the product of local custom and local circumstances. For instance, what efficacy can the decrease in the rediscount rate of a Federal reserve bank from 7 to 6 per cent have on a western or southwestern bank charging 8, 10, or 12 per cent? Furthermore, it must be obvious that rediscount rates can only be effective in the restriction of loans and discount against a bank which was borrowing from its Reserve bank. And by no means were even all member banks borrowing. For example, in September, 1920, in the New York district there were 454 nonborrowing banks, as against 323 borrowing ones.

(3) In so far as agricultural counties were concerned, far from receiving less credit from the Federal reserve banks during the period referred to, the figures show that from May 4, 1920, to April 28, 1921, rediscounts by banks in the agricultural counties with the Federal reserve banks actually increased 56.6 per cent.

Incidentally, it may be noted that during the same period borrowings from Federal reserve banks in nonagricultural counties decreased 28.5 per cent. If the statement which I question be true, it would seem to follow that a lower rediscount rate would have tended primarily to maintain industrial prices to the further disadvantage of the farmer.

(4) Finally, while it can not be conclusively proved that credit stringency was not an initial contributing factor to price deflation, there is no evidence to show that it was. By this I do not mean to state that once prices started to drop, it was not the cause of much hardship and, in many cases, of increased losses. Quite the contrary. It was. But I do not believe that increased interest rates and contracting credit were the primary causes of the sharp price deflation which characterized the second half of the year 1920.

Digitized by Google

(*a*) The price peak of the all commodities index was reached in May, 1920, while loans of all reporting banks and discounts of Federal reserve banks did not reach their maximum until October, and currency issues until January, 1921.

In so far as the following agricultural commodities are concerned, prices reached their peak as early as 1919, and declined rapidly thereafter some months before Federal bank discount rates were materially raised or any credit stringency felt: hogs, bacon, cattle, mutton, dressed, and butter. There was in practically every one of these cases a direct relationship between the peak of the export trade and the price peak. Thus, the peak of hog exports was reached in June and the price peak in July; and the same is true of bacon. The cattle export peak was reached in August, 1919, and the price peak in November. The cotton export peak was reached in April, 1920, and the price peak the same month. The export peak of the total farm index was reached in March, 1920, and the price peak in April of that year.

If a careful study be made of chapter 5 of Part I of this report, numerous instances will be found in which a relationship can be shown between the peak of production and consumption and the peak of prices. But no such relationship can be established between increased discount rates and the drop in the price of any single commodity.

(*b*) Agricultural prices broke more sharply than any other, and yet from May, 1920, to May, 1921, the liquidation of loans in agricultural counties was relatively much less than in industrial counties.

(*c*) Interest charges as an element of expense in the cost of production and marketing must not be exaggerated. They are usually a small percentage of the total outlay, which is largely accounted for by the cost of labor, material, transportation and distribution.

(*d*) The price deflation movement was world wide. The crisis began in Japan late in 1919. The price level of all commodities began to decline in the United Kingdom in April, 1920; in France and Italy in May; in the United States, Germany, India, and Canada in June; in Sweden in July; in the Netherlands in August; and in Australia in September.

I may add in conclusion, that I think it desirable to present this minority opinion, because of the view apparently held by a considerable number of people that the increase in the discount rates of the Federal reserve banks was one of the primary causes of the sharp break in prices which occurred during the second half of 1920 and which so disastrously affected the agricultural communities. Such a view inevitably leads to the conclusion that the Federal Reserve Board and banks constitute an agency by means of which prices may be raised or lowered. This opinion is so contrary to economic facts and to the purposes of the Federal reserve system, that any expression of opinion which seems to support it, even indirectly, should not be permitted to pass unchallenged.

OGDEN L. MILLS.

O

Digitized by Google

Digitized by Google

67TH CONGRESS } HOUSE OF REPRESENTATIVES { REPT. 408
1st Session } { PART 3

TRANSPORTATION

REPORT OF THE JOINT COMMISSION OF AGRICULTURAL INQUIRY

IN FOUR PARTS

PART III

SUBMITTED BY MR. ANDERSON

OCTOBER 15, 1921.—Ordered to be printed with illustrations

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

Digitized by Google

HARVARD COLLEGE LIBRARY
FROM THE
PRESIDENT'S OFFICE
Oct. 5, 1922

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

UNITED STATES CONGRESS.

HOUSE MEMBERS.

SYDNEY ANDERSON, Minnesota, *Chairman.*
OGDEN L. MILLS, New York.
FRANK H. FUNK, Illinois.
HATTON W. SUMNERS, Texas.
PETER G. TEN EYCK, New York.

IRVING S. PAULL, *Secretary.*

SENATE MEMBERS.

IRVINE L. LENROOT, Wisconsin.
ARTHUR CAPPER, Kansas.
CHARLES L. McNARY, Oregon.
JOSEPH T. ROBINSON, Arkansas.
PAT HARRISON, Mississippi.

DONALD D. CONN,
Chief, Transportation Division.

Digitized by Google

CONTENTS.

	Page.
List of tables	III
List of charts	X
Introduction	1
Summary	3
Chapter I—Economic Relationship of Agriculture, Industry, and Transportation	9
Chapter II—Transportation by Steam Railroads	212
Chapter III—Railroad Management and Organization	307
Chapter IV—Railway Finance	310
Chapter V—Railroad Express Companies	321
Chapter VI—Parcel Post	332
Chapter VII—Electric Railways	339
Chapter VIII—Highway Transportation	348
Chapter IX—Transportation by Water	366
Chapter X—Federal and State Regulation of Transportation	393
Chapter XI—Foreign Railway Systems	424
Chapter XII—History of Railway Transportation	433
Minority Views of Ogden L. Mills	450
Minority Views of Peter G. Ten Eyck	451
Definitions of Railroad Terms	470
Tables	473
Index	655

LIST OF TABLES.

CHAPTER 1.

	Page.
A1. Relationship of eastern portion of the United States to the total	10
A2. Railway revenue per revenue-ton mile 1910–1921	10
A3. Purchasing power of farm products in terms of transportation	11
A4. Value of commodities transported in United States, 1914	11
A5. Comparison of rates on cattle	12
A6. Comparison of rates on hogs	13
A7. Comparison of rates on sheep	13
A8. Comparison of rates on wheat	15
A9. Comparison of rates on corn	15
A10. Comparison of rates on eggs	15
A11. Comparison of rates on dressed poultry	15
A12. Comparison of rates on cheese	16
A13. Comparison of rates on wool	16
A14. American Railway Express Co., second-class express rates	473
A15. Express rates on fruits and vegetables	475
A16. Express rates on citrus fruits and pineapples	477
A17. Express rates on butter, cheese, dressed poultry, eggs	478
A18. Express carload rates	480
A19. Statement showing percentage increase in second-class express rates, 1914–1920	481
A20. Fruits and vegetables originated and handled by rail carriers, 1899–1921	18
A21. Number of cars moved, long and short haul; approximate length of haul, fresh fruits and vegetables	23

Digitized by Google

Page.

A22. The relative number of cars loaded with green fruits and vegetables, by districts, years 1918–1921, inclusive ... 24
A23. Thickness of insulation in refrigerator cars and the number having floor racks ... 27
A24. Summary of 9,476 cars of representative fruits and vegetables ... 31
A26. Cost of distribution and growers' return on California oranges ... 55
A27. Estimated annual production of apples ... 56
A28. Production of commercial apples ... 56
A29. Apples, carload shipments by States of origin, 1917–1921 ... 57
A30. Yearly unloads of apples at 10 markets, 1916–1921 ... 58
A31. Annual apple exports ... 61
A32. Apples exported from United States and Canada, season 1920–21 ... 61
A33. Asparagus, commercial production by States, 1918–1921 ... 62
A34. Cabbage, commercial production by States, 1916–1921 ... 62
A35. Cabbage, carload shipments, by States of origin, calendar years 1917–1921 ... 63
A36. Cabbage, yearly unloads at 10 markets, 1916–1921 ... 63
A37. Cantaloupes, commercial production by States, 1918–1921 ... 64
A38. Cantaloupes, carload shipments by States of origin, 1917–1921 ... 64
A39. Cauliflower, commercial production by States, 1918–1921 ... 65
A40. Celery, commercial production by States, 1918–1921 ... 65
A41. Celery, carload shipment by States of origin, 1919–1921 ... 65
A42. Cucumbers, commercial production by States, 1918–1921 ... 66
A43. Lettuce, carload shipments by States of origin, 1919–1921 ... 66
A44. Lettuce, commercial production by States, 1918–1921 ... 66
A45. Onions, commercial production by States, 1915–1921 ... 67
A46. Onions, carload shipments by States of origin, 1917–1921 ... 67
A47. Onions, yearly unloads at 10 markets, 1916–1921 ... 68
A48. Oranges, annual production in the United States ... 68
A49. Oranges, yearly car-lot shipments, by States of origin, 1919 and 1920 ... 68
A50. Exports of lemons and oranges from the United States by countries of destination ... 69
A51. Peaches, agricultural production, 1913–1921 ... 69
A52. Peaches, commercial production ... 70
A53. Peaches, carload shipments by States of origin, 1917–1921 ... 71
A54. Peaches, yearly unloads at 10 markets, 1916–1921 ... 71
A55. Pears, agricultural production, 1913–1921 ... 73
A56. Pears, carload shipments by States of origin, 1919–1921 ... 73
A57. Potatoes, carload shipments by States of origin, 1917–1921 ... 74
A58. Potatoes, yearly unloads at 10 principal markets, 1916–1921 ... 74
A59. Sweet potatoes, production by States, 1913–1921 ... 75
A60. Sweet potatoes, carload shipments by States of origin, 1919–1921 ... 75
A61. Strawberries, commercial production by States, 1916–1921 ... 76
A62. Strawberries, yearly unloads at 10 principal markets, 1916–1921 ... 76
A63. Tomatoes, carload shipments by States of origin, 1917–1921 ... 77
A64. Watermelons, commercial production by States, 1918–1921 ... 77
A65. Watermelons, carload shipments by States of origin, 1919–1921 ... 78
A66. Price paid producer, with market price and transportation cost, on wheat, corn, oats, barley ... 482
A67. Statement showing the average price paid producer, the average market price, and the average transportation cost, from typical producing points to typical market:
Barley ... 501
Corn ... 502
Wheat ... 503
Oats ... 505
A68. Comparison of farm prices ... 94
A69. The average buying margin as found by the Federal Trade Commission ... 95
A70. Production and distribution of American cotton ... 101
A71. Summary of States leading in importance in the manufacture of cotton goods ... 101
A72. Cotton, from various States, with price paid producer, market price, and transportation cost ... 506
A73. Cotton, from various States, with price paid producer, market price, and transportation cost ... 509

Digitized by Google

Page.

A74. Statement showing the average price paid producer, the average market prices, and the average transportation cost from typical producing points to typical markets (cotton, middling grade) 512
A75. Statement showing receipts and shipments of hay in tons at principal markets 104
A76. Summary of hay movement, year ended June 30, 1914 105
A77. Hay, price paid producer, market price and transportation cost 514
A78. Hay, No. 1 wild, from Green Bay, Wis., to Chicago, Ill., price paid producer, market price and transportation cost 520
A79. Hay, price paid producer, market price, and transportation costs 524
A80. Hay, price paid producer, market price, and transportation cost 532
A81. Comparison of market prices of hay, 1913 and 1921, average price per ton 107
A82. Comparison of average farm prices of hay 107
A83. Shrinkage of beef cattle in transit 112
A84. Crippled and dead live stock 113
A85. Minimum weights and safe loading weights of live stock:
Cattle 113
Hogs 113
Horses 114
Sheep 114
A86. Average freight rates per hundred pounds and average haul of live stock 115
A87. Number of head, weight, proceeds, deductions, and net proceeds to shippers on—
Cattle, from Ruthton, Minn., to Sioux City, Iowa 536
Cattle, medium to light, from Clio, Iowa, to Kansas City Stockyards, Mo. 537
Beef steers, from Baker to Portland, Oreg 538
Hogs, from Garretson, S. Dak., to Sioux City, Iowa 539
Hogs, from Joy to Chicago, Ill 540
Hogs, from Baker to Portland, Oreg 541
Sheep, from Monte Vista, Colo., to Kansas City Stockyards, Mo. 542
Sheep, from Jamesport to Kansas City Stockyards, Mo 543
A88. Average gross and net proceeds to shipper and average transportation and other charges in transit from typical producing points to typical markets, live stock 544
A89. Wool, price paid producer, market price, and transportation cost 121
A90. Wool, statement showing the average price paid producer, the average market prices, and the average transportation cost from typical producing points to typical markets 123
A91. Changes in freight on cattle and beef, 1921 compared to 1914 131
A92. Butter receipts at four leading markets 134
A93. Freight rates on butter in carloads 134
A94. Quantity and value of cheese produced in factories, by States, for the year 1919 136
A95. Cheese, receipts at four leading markets 136
A96. Condensed milk prices and rates:
Percentage of increase 140
Comparison showing increases on January 1, 1916, and at the present time 141
A97. Rates and prices on condensed milk 142
A98. Relative freight charges on the quantity of evaporated milk, cheese, and butter produced from 100,000 pounds fresh milk 143
A99. Dressed poultry receipts at four leading markets 146
A100. Average receipts and average market prices at Chicago and New York and average farm prices in the United States of eggs for the years 1913–1920 148
A101. Receipts of eggs at four leading markets 149
A102. Fertilizer, southern territory, spring prices 151
A103. Fertilizer, agents' prices f. o. b. Carteret, N. J 151
A104. Fertilizer, average per ton freight cost, 12 plants, for years 1918–1920 and 1921 153
A105. Fertilizer, ratio of freight cost to values, for years 1918–1920 and 1921 154

Digitized by Google

Page.

A106. Cost to farmer of a gang plow, farm wagon, grain binder, and corn binder at representative corn and wheat producing points for specified periods 1913–1922 and per cent of increase in cost over 1913 ... 159
A107. Freight costs of a gang plow, farm wagon, grain binder, and corn binder 1913–1922 and per cent increase over 1913 ... 159
A108. Price of corn and wheat (Chicago market) ... 160
A109. Number of bushels of corn required to purchase a farm wagon, gang plow, corn binder, and grain binder manufactured at Moline, Ill., and sold at representative consuming centers ... 160
A110. Total amount of freight involved in the manufacture and sale of a gang plow, farm wagon, grain binder, and corn binder manufactured at Moline, Ill., and sold at grain-producing centers ... 164
A111. Number of bushels of wheat involved in the manufacture and sale of a gang plow, farm wagon, grain binder, and corn binder manufactured at Moline, Ill., and sold at grain-producing centers ... 165
A112. Total amount of freight involved in the manufacture and sale of a farm wagon, gang plow, corn binder, and grain binder manufactured at Moline, Ill., and sold at grain-producing centers ... 165
A113. Price of corn and hogs (Chicago market) ... 167
A114. Number of pounds of hogs (live weight) required to purchase the four typical farm implements at Culbertson, Nebr ... 168
A115. Amount of hogs (live weight) and its value at Culbertson, Nebr., resulting from the conversion of the amount of corn required to buy the four typical farm implements ... 170
A116. Ore shipped, gross tons ... 172
A117. Average prices of iron and steel products ... 175
A118. Freight rates to Mahoning and Shenango Valleys ... 176
A119. Showing a comparison of freight rates, 1913–1921, of pig iron and articles taking pig-iron rates, billets and articles taking billet rates, and manufactured iron and steel articles from Mahoning and Shenango Valleys ... 177
A120. Carload rates on cast-iron pipe from Birmingham (Ala.) district ... 177
A121. Freight cost in 1913–1921 of Bessemer bars and open-hearth bars, at Youngstown, Ohio ... 177
A122. Freight rates on wire nails in kegs, less than carloads ... 178
A123. Freight rates on barbed wire, less than carloads ... 178
A124. Distribution of bituminous coal produced in the United States in 1918, by routes and destinations ... 547
A125. Movement via inland waterways—destination of cargo coal dumped at Lake Erie ports during the season of 1921, compared with 1919 and 1920 ... 179
A126. Bituminous coal prices, freight, and retail margins January, 1922 ... 184
A127. Average mine, wholesale and retail prices of coal and the average transportation cost from typical producing districts to typical markets ... 550
A128. Lumber, drop siding No. 2, from Everett, Wash., to Aberdeen, S. Dak ... 562
2 by 4 by 14, from Everett, Wash., to Bozeman, Mont ... 563
Common boards, 8 and 10 feet, from Everett, Wash., to Devils Lake, N. Dak ... 564
No. 1 yellow pine, 2 by 4 inches by 16 feet, from Laurel, Miss., to Cincinnati, Ohio ... 565
Yellow pine, No. 1 common, 2 by 4 inches by 16 feet, from Bogalusa, La., to Topeka, Kans ... 567
Average price received by producer, the average price paid by consumer, and the average transportation cost of lumber from typical producing points to typical consuming points ... 569
A129. History of the retail prices of specified grades and items of lumber at typical consuming points as of the month of September, 1915 to 1921 ... 571
A130. Statement showing the average relationship of freight cost to prices on specified grades of shingles from typical points of origin to consuming destinations ... 573
A131. Production of gasoline in the United States ... 196
A132. Production of kerosene in the United States ... 196

Digitized by Google

Page.
A133. Gasoline consumption 196
A134. Kerosene consumption 197
A135. Freight rates on gasoline and kerosene 199
A136. Total shipments of cement in the United States for the years 1911–1921 201
A137. Freight rate on representative raw materials entering into the manufacture of cement 202
A138. Increase in the price per thousand of hollow tile to the consumer 203
A139. Number of shoes and shipping weight per case 205
A140. Freight rates on shoes 205
A141. Freight rates on shoes, Lynn, Mass. 206
A142. Freight rates on dry goods 206
A143. Freight rates on cotton piece goods 207
A144. Loss and damage claim payments, Class I railroads 208
A145. Freight loss and damage claims paid in first 10 months of 1921 210
Loss and damage freight expenditures, 1914–1920, Class I railroads. 210

CHAPTER 2.

B1. Property investment (book value) and operating income account of Class I railroads, 1911 to 1920 220
B2. Per cent of annual increase and increase over 1911 of operating revenues, operating expenses, income account, Class I railroads 224
B3. Units of traffic per $100 of investment of all roads 227
B4. Population of the United States 574
B5. Mileage of railroads by States 576
B6. Mileage Class I, II, and III roads 228
B7. Mileage by classes, per cent of annual increase, and increase over 1911, Class I railroads 229
B8. Freight and passenger traffic of Class I railroads 231
B9. Locomotives, passenger-train cars, and company service cars in service of Class I railroads, 1911 to 1920 580
B10. Passenger-train cars owned and operated by the railroads 584
B11. Freight cars owned and operated by the railroads 585
B12. Aggregate capacity (in tons) of cars owned and operated by the railroads 587
B13. Average capacity all freight cars and number of freight cars of steel construction, in service of Class I railroads, 1911 to 1920 589
B14. Locomotives, passenger cars, and freight cars installed and retired, 1907 to 1920, Class I railroads 590
B15. Pullman Co.—Cars in service, years 1910 to 1921 591
B16. Facilities at tidewater ports 243
B17. Coal and ore pier facilities at principal tidewater and lake ports 244
B18. Eastern tidewater bituminous coal shipments 246
B19. Lake coal—tons dumped into boats monthly 248
B20. Maintenance of way and structures expenses 249
B21. Total maintenance of equipment expenses and equipment repairs, retirements, and depreciation, Class I railroads, 1911 to 1920 251
B22. Locomotives repaired in commercial shops 252
B23. The average costs and selling prices based on returns covering the repair of 133,699 freight cars at commercial shops 254
B24. Tons of revenue freight originated 592
B25. Percentages indicating the relative volume of tonnage originated 593
B26. Commodities loaded, by calendar months, Class I railroads, carloads 256
B27. Surplusages and shortages of freight cars, Class I railroads 597
B28. Car mileage, Class I railroads, 1911 to 1920 602
B29. Operation—Steam railroads 259
B30. Number of cars in bad order and the percentage in bad order to total cars on line, Class I railroads 265
B31. Number of home cars on home roads and the percentage of home cars on home roads to the total number owned, Class I railroads 606
B32. Locomotive mileage and train mileage of Class I railroads, 1911 to 1920 607

Digitized by Google

Page.

B33. Per cent of annual increase and increase over 1911 and 1915 locomotive and train mileage of Class I railroads 611
B34. Train-miles, ton-miles, passenger-miles; per cent of annual increase and increase over 1911 612
B35. Gross, net, and tare ton-miles, Class I railroads 614
B36. Fuel consumption and cost, Class I railroads 269
B37. Loaded and empty car-miles by direction produced by typical railroads, 1920–21 615
B38. A comparison of the classes of loading by commodities—showing the total cars loaded, total tonnage, and net tons per car 628
B39. Accumulation of cars loaded with freight being held at the principal terminals and yards on Class I railroads 281
B40. Traffic averages of Class I railroads, 1911 to 1920 285
B41. Revenues and expenses by general accounts and taxes 288
B42. Passenger service train revenue—railroads of the United States 632
B43. Income account, Pullman Co.—years 1910 to 1921 632
B44. Employees, hours or days worked, and compensation, Class I roads 633
B45. Statement showing what the reduction in compensation for the first six months of 1921 would have been had the wage reduction of July 1, 1921, been in effect during that period 636

CHAPTER 3.

C1. Property investment (book value) railway operating income and net railway operating income 1908–1920, steam roads 314
C2. Railway capital actually outstanding and net income 1908–1920, steam roads 315
C3. Market value of American railways 318
C4. Comparison of investment in road and equipment with railway capital outstanding not held by railway companies 319

CHAPTER 5.

E1. Property investment of railroad express companies 322
E2. Income account and dividend payments of railroad express companies July 1, 1911, to October 31, 1921, inclusive 326
E3. Supervision costs of railroad express companies 328
E4. Income account and dividend payments of railroad express companies July 1, 1911, to October 31, 1921, inclusive 329

CHAPTER 6.

F1. Parcel-post rates 333
F2. Comparative statement of parcels mailed at all post offices, showing number, postage, weight, and average postage per pound 335

CHAPTER 7.

G1. Statistics relating to electric railways 340
G2. Car-mile averages, electric railways 342

CHAPTER 8.

H1. Motor-vehicle registrations and gross motor-vehicle revenues, 1915 to 1920 349
H2. Taxes paid by motor-vehicle users, 1921 353
H3. Federal aid status; financial statement as of January 31, 1922 353
H4. Status of construction on Federal-aid post road projects as of January 31, 1922 356
H5. Summary of Federal-aid projects completed and payment made 637
H6. Total estimated rural road and bridge expenditures for period 1900–1921 and present estimated replacement value of these roads 357
H7. Summary of salient features of State laws regulating motor-vehicle common carriers 640
H8. Summary of comparison of railroad and motor truck rates (old rates) 362

Digitized by Google

Page.

H9. Summary of comparison of railroad and motor truck rates (new rates) ---------- 362

CHAPTER 9.

I-1. United States Shipping Board status of finance and shipping; consolidated balance sheet as of June 30, 1921---------- 367
I-2. Disposition of appropriation moneys, Shipping Board, from inception to July 1, 1921---------- 368
I-3. Recapitulation of owned and controlled vessels, Shipping Board, December 31, 1921---------- 369
I-4. Distribution by trade allocation, Shipping Board, December 31, 1921- 369
I-5. Distribution of fleet by form of control, Shipping Board, December 31, 1921---------- 371
I-6. Freight rates between the United States, North Atlantic ports, and the United Kingdom and Mediterranean ports, 1912-1921---------- 372
I-7. Cargo tonnage and tolls assessed on vessels of principal nations passing through the Panama Canal---------- 373
I-8. Commercial traffic through the Panama Canal---------- 375
I-9. Classification of cargo passing through the Panama Canal---------- 376
I-10. Property investment, revenues, and expenses of 11 carriers:
Total coastwise and Great Lakes---------- 644
Atlantic and Gulf coasts---------- 645
Pacific coast---------- 646
Great Lakes---------- 647
I-11. Operating statistics, steamship lines, coastwise and Great Lakes-- 648
I-12. Shipments by inland water transportation for calendar years 1920 and 1916---------- 379
I-13. Carriers by water, freight revenue per ton of freight handled---- 380
I-14. Expenditures, United States Government canals and rivers---------- 381
I-15. United States Government owned and operated vessels, Mississippi and Warrior Rivers---------- 382
I-16. United States owned and operated vessels, Warrior River section, to December 31, 1921---------- 383
I-17. United States Government owned and operated vessels of Mississippi River section to December 31, 1921---------- 383
I-18. United States Government owned and operated vessels, Warrior River section; average net revenue per ton---------- 384
I-19. United States Government owned and operated vessels, Mississippi River section; average net revenue per ton---------- 384
I-20. Movement of bulk freight on the Great Lakes, for the calendar years 1905 to 1920, inclusive---------- 386
I-21. Lowest and highest freight rates on wheat by lake from Duluth to Buffalo---------- 387
I-22. Shipments of grain and flour through St. Marys Falls Canal, 1871-1909 ---------- 389
I-23. Bulk grain and grain products eastbound through canals at Sault Ste. Marie, Mich., and Ontario, 1910-1920---------- 389
I-24. Wheat by lake and rail from Duluth and Superior, 1901-1909---- 390
I-25. Lake shipments and receipts of bulk freight and package freight, Great Lakes 1889-1918, inclusive---------- 650

LIST OF CHARTS.

CHAPTER 1.

A1. Comparison of movement of prices of farm products with railroad freight rates---------- 10
A2. Regional distribution of commercial apple acreage---------- 19
A3. Regional distribution of commercial peach acreage---------- 20
A4. Regional distribution of commercial pear acreage---------- 21
A5. Distribution of the proceeds of 9,476 cars of representative fruits and vegetables, 1920, 1921---------- 23
A6. Distribution of total sales of fruits and vegetables---------- 32

Digitized by Google

Page.
A7. Distribution of total sales of barreled apples 33
A8. Distribution of total sales of box apples 33
A9. Distribution of total sales of northern cabbage 34
A10. Distribution of total sales of southern cabbagge 35
A11. Distribution of total sales of Texas cabbage 36
A12. Distribution of total sales of California cantaloupe 37
A13. Distribution of total sales of Florida citrus 37
A14. Distribution of total sales of California cauliflower 38
A15. Distribution of total sales of celery 39
A16. Distribution of total sales of grapes from New York and Michigan 40
A17. Distribution of total sales of grapes from California 41
A18. Distribution of total sales of iceburg lettuce 41
A19. Distribution of total sales of mixed vegetables 42
A20. Distribution of total sales of miscellaneous fruits 43
A21. Distribution of total sales of northern onions 44
A22. Distribution of total sales of Texas onions 45
A23. Distribution of total sales of Texas onions (movement to New York) 45
A24. Distribution of total sales of Maine potatoes 46
A25. Distribution of total sales of northern potatoes 47
A26. Distribution of total sales of southern potatoes 48
A27. Distribution of total sales of fresh prunes 49
A28. Distribution of total sales of Texas spinach 49
A29. Distribution of total sales of southern strawberries 50
A30. Distribution of total sales of sweet potatoes 51
A31. Distribution of total sales of tomatoes 51
A32. Division of the consumers' dollar paid for oranges from California 53
A33. Annual apple exports 59
A34. Apples exported from the United States and Canada, season 1920–21 60
A35. Distribution of Georgia peaches, season 1921 72
A36. Division of receipts from sale of cranberries, 1920 78
A37. Grain situation at primary markets, Minneapolis, Minn., 1920–21 81
A38. Grain situation at primary markets, Chicago, Ill., 1920–21 82
A39. Grain situation at primary markets, Duluth, 1920–21 83
A40. Grain situation at primary markets, Kansas City, 1920–21 84
A41. Grain situation at primary markets, Milwaukee, Wis., 1920–21 85
A42. Grain situation at primary markets, Omaha and Council Bluffs, 1920–21 86
A43. Grain situation at primary markets, Peoria, Ill., 1920–21 87
A44. Grain situation at primary markets, St. Louis, Mo., 1920–21 88
A45. Grain situation at primary markets, Buffalo, N. Y., 1920–21 89
A46. Grain situation at ports, 1920–21, New York, N. Y 90
A47. Grain situation at ports, 1920–21, Philadelphia, Pa 91
A48. Grain situation at ports, 1920–21, Boston, Mass 92
A49. Grain situation at ports, 1920–21, Baltimore, Md 93
A50. Grain situation at ports, 1920–21, Newport News, Va 96
A51. Grain situation at ports, 1920–21, New Orleans, La 97
A52. Grain situation at ports, 1920–21, Galveston, Tex 98
A53. Relation of freight cost to commodity prices at point of origin, country elevator and destination market (No. 1 hard common white wheat, from Quincy, Wash., to Seattle, Wash 99
A54. Relation of freight cost to commodity prices at point of origin, country elevator, and destination market (No. 2 red winter wheat, from Murphysboro, Ill., to Baltimore, Md.) 99
A55. Relation of freight cost to commodity prices at point of origin, country elevator and destination market (No. 2 hard winter wheat, from Pratt, Kans., to Kansas City, Mo.) 99
A56. Relation of freight cost to commodity prices at point of origin, country elevator and destination market (No. 2 hard winter wheat, from Enid, Okla., to Kansas City) 99
A57. Relation of freight cost to commodity prices at point of origin, country elevator and destination market (No. 2 northern spring wheat, from Warren, Minn., to Minneapolis) 99
A58. Relation of freight costs to commodity prices at points of origin, country elevator, and destination, market (No. 2 dark northern spring wheat, from Mansfield, S. Dak., to Chicago, Ill.) 99

Digitized by Google

Page.

A59. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 1 dark northern spring wheat, from Havre, Mont., to Minneapolis) 99
A60. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 mixed corn, from Winner, S. Dak., to Chicago, Ill.) 99
A61. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 yellow corn, from Petersburg, Nebr., to Omaha, Nebr.) 99
A62. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 2 yellow corn, from Akron, Iowa, to Chicago, Ill.) 99
A63. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 yellow corn, from Galesburg, Ill., to Chicago, Ill.) 99
A64. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 mixed corn, from Dallas, S. Dak., to Minneapolis) 99
A65. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 yellow corn, from Bloomington, Ill., to St. Louis, Mo.) 99
A66. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 2 mixed corn, from New Kirk, Okla., to Kansas City, Mo.) 99
A67. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from McIntosh, Minn., to Minneapolis) 99
A68. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from Redfield, S. Dak., to Minneapolis, Minn.) 99
A69. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from Urbana, Ohio, to New York) 99
A70. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from Chariton, Iowa, to New Orleans, La.) 99
A71. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 2 white oats, from Decatur, Ill., to New York) 99
A72. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from Cedar, Iowa, to St. Louis, Mo.) 99
A73. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 2 white oats, from Neligh, Nebr., to Omaha, Nebr.) 99
A74. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 2 white oats, from Wapella, Ill., to Chicago, Ill.) 99
A75. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from Belle Plaine, Iowa, to Chicago, Ill.) 99
A76. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 white oats, from Lake Preston, S. Dak., to Chicago, Ill.) 99
A77. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 4 barley, from Bird Island, Minn., to Minneapolis) 99
A78. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 2 barley, from Ulen, Minn., to Minneapolis) 99
A79. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 3 barley, from Ellendale, N. Dak., to Minneapolis, Minn.) 99
A80. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (No. 4 barley, from Carrington, N. Dak., to Minneapolis) 99

Digitized by Google

Page

A81. Relation of freight costs to commodity prices at points of origin, country elevator, and destination (medium barley, from Esmond, S. Dak., to Chicago, Ill.) 9
A82. Relation of freight costs to commodity prices at points of origin, country elevator and destination, market (medium barley, from Andover, S. Dak., to Milwaukee, Wis.) 9
A83. Relation of freight costs to commodity prices at points of origin, and destination, market (cotton middling from Abilene, Tex., to Galveston, Tex.) 10
A84. Relation of freight costs to commodity prices at points of origin, and destination market (cotton middling from Milledgeville, Ga., to Savannah, Ga.) 10
A85. Relation of freight costs to commodity prices at points of origin, and destination market (cotton middling from Blytheville, Ark., to New Orleans, La.) 10
A86. Relation of freight costs to commodity prices at points of origin, and destination market (cotton middling from Hartsville, S. C., to Lowell, Mass.) 10
A87. Relation of freight costs to commodity prices at points of origin, and destination, market (cotton middling from Blytheville, Ark., to Lowell, Mass.) 102
A88. Prices of cotton at New Orleans and on farms, 1911–1921 102
A89. Relation of freight costs to commodity prices at point of origin and destination (No. 1 wild hay, from Green Bay, Wis., to Chicago, Ill.) 106
A90. Relation of freight costs to commodity prices at point of origin and destination (No. 1 wild hay, from Newport, Nebr., to Chicago, Ill.) 106
A91. Relation of freight costs to commodity prices at point of origin and destination (No. 2 timothy hay, from Columbia Cross Roads, Pa., to New York, N. Y.) 106
A92. Relation of freight costs to commodity prices at point of origin and destination (No. 2 timothy hay, from Limespring, Iowa, to St. Louis, Mo.) 106
A93. Wool, relation of freight cost to commodity prices at point of origin and destination, 1912–13, 1915–16, 1920–21; yearly averages 120
A94. Seasonal influence of receipts of cattle, monthly, 1917–1920 126
A95. Daily receipts of cattle at Chicago, Ill., March, 1921 126
A96. Receipt of hogs, monthly, 1917–1921, 11 markets 127
A97. Daily receipts of hogs at Chicago, Ill., March, 1921 128
A98. Receipts of sheep at seven principal markets, monthly, 1917–1920 129
A99. Daily receipts of sheep at Chicago, Ill., March, 1921 130
A100. Railroad rates on live cattle, dressed beef, and packing-house products from Chicago to New York, N. Y., 1872, to date 132
A101. Butter, number of pounds shipped to Chicago during 1921 135
A102. Percentage of cheese production in United States, by States, 1914–1920 137
A103. Cheese, number of pounds shipped to Chicago during 1921 138
A104. Dressed poultry, number of pounds shipped to Chicago during 1921 145
A105. Eggs, number of cases shipped to Chicago during 1921 147
A106. Relative number bushels of corn required to purchase four typical implements at representative corn-producing centers, 1913–1922 162
A107. Relative number bushels of wheat required to purchase four typical implements at representative wheat-producing centers, 1913–1922 161
A108. Production in United States of iron ore, coke, pig iron, finished iron and steel, 1913–1921 172
A109. Production of principal kinds of finished rolled iron and steel, 1913–1920 173
A110. Distribution of bituminous coal consumption by classes of consumers, 1918 180
A111. Anthracite and bituminous coal produced in United States, 1913 to 1921 181
A112. Composition of average retail prices at specified cities for years 1913–1916, and 1921, bituminous coal 182
A113. Composition of average retail prices at specified cities for years 1913–1916, and 1921, anthracite coal 187

Digitized by Google

Page.

A114. Lumber, No. 2 flooring; average freight costs to mill, retailer's and consumer's prices in representative consuming States 189
A115. Lumber, No. 2 drop siding; average freight costs to mill, retailer's and consumer's prices in representative consuming States 189
A116. Lumber, 2 by 4 inches; average freight costs to mill, retailer's and consumer's prices in representative consuming States 189
A117. Lumber 8 and 10 inch common boards; average freight costs to mill, retailer's and consumer's prices in representative consuming States 189
A118. Trend of carload rates on newsprint paper to Chicago, Ill., from various producing territories, 1914–1922 193
A119. Newsprint prices in dollars per ton, 1914–1922 194
A120. Loss and damage claims, steam railroad, 1914–1921 209

CHAPTER 2.

B1. Operation, steam railroads; income account 226
B2. Operation, steam railroads; operating expenses 226
B3. Operation, steam railroads; operating revenue 226
B4. Service, steam railroads; freight and passengers transported for each $100 of investment, 1890–1920 228
B5. Facilities, steam railroads; track mileage, equipment, traffic density 233
B6. Facilities, steam railroads; freight cars owned and operated 234
B7. Facilities, steam railroads; equipment, additions, and retirements 234
B8. Coal dumped into boats at Lake Erie ports, 1913–1921 247
B9. Operation, steam railroads; freight transportation, 1909–1921 258
B10. Traffic, steam railroads; revenue freight originated, 1914–1920 255
B11. Operation, steam railroads; train service 270
B12. Operation, steam railroads; locomotive performance 271
B13. Operation, steam railroads; nonproductive ton-miles, 1911–1921 274
B14. Use of the freight car; commodity loading 278
B15. Operation, steam railroads; carload freight accumulation, 1917–1921 283
B16. Maintenance, steam railroads; section men, service and compensation 290
B17. Maintenance, steam railroads; foremen maintenance of equipment department, service and compensation 291
B18. Maintenance, steam railroads; car inspectors, car repairers, air-brakemen, service and compensation 292
B19. Operation steam railroads; passenger-train employees, service and compensation 294
B20. Operation, steam railroads; freight-train employees, service and compensation 295
B21. Operation, steam railroads; clerical forces, service and compensation 296
B22. Operation, steam railroads; traffic employees, service and compensation 297
B23. Operation, steam railroads; transportation department employees, exclusive of train employees, service and compensation 298
B24. Operation, steam railroads; general officers, service and compensation 299
B25. Operation, steam railroads; division officers, service and compensation 300
B26. Operation, steam railroads; all employees, service and compensation 301
B27. Operation, steam railroads; wages of labor (railroad, on the farm, other industries) 303
B28. Operation, steam railroads; average per train-mile, revenue and expenses 304

CHAPTER 3.

C1. Range of average prices on the New York Stock Exchange, 1912–1921 319

CHAPTER 7.

G1. Statistics, electric railways, United States, 1890–1921 343

Digitized by Google

CHAPTER 8.

Page.
H1. Motor-vehicle registration and highway funds 352
H2. Funds expended for construction for roadbed and investment in motorized highway rolling stock 355
H3. Progress of Federal-aid road work 356

CHAPTER 9.

I1. Panama Canal, cargo tonnage, and tolls assessed United States and foreign vessels, 1915–1922 374

Digitized by Google

TRANSPORTATION.

INTRODUCTION.

The Joint Commission of Agricultural Inquiry was created by Senate concurrent resolution 4 and directed to investigate and report to the Congress upon the following subjects:

1. The causes of the present condition of agriculture.
2. The cause of the difference between the prices of agricultural products paid to the producer and the ultimate cost to the consumer.
3. The comparative condition of industries other than agriculture.
4. The relation of prices of commodities other than agricultural products to such products.
5. The banking and financial resources and credits of the country, especially as affecting agricultural credits.
6. The marketing and transportation facilities of the country.

The resolution was passed by the Senate May 31, 1921, and by the House June 7, 1921, and as adopted required this commission to report within 90 days after the passage of the resolution. This period, however, was subsequently extended to the first Monday in January, 1922, and thereafter to April 15, 1922.

As was recited in the first two parts of this report, it was clear at the outset that the subjects of investigation set forth in the resolution covered so broad a field that the commission could not hope to report upon all of them. Accordingly an effort was made to reduce the inquiry to the major subjects upon which it seemed possible for the commission to report within the period originally fixed and subsequently extended. The inquiry was, therefore, divided into four major subjects, as follows:

1. The condition of agriculture and the factors which caused it.
2. The adequacy and effectiveness of the credit machinery and resources of the country.
3. Transportation.
4. Marketing and distribution.

The present part of the report deals primarily with the subject of transportation. Necessarily, in analyzing the relationship of transportation to agriculture and industry, it also deals partially with the related matter covered by the other three major subjects.

The commission, in order to secure the material for this report, established a transportation division on August 1, 1921. This division organized throughout the United States committees representa-

Digitized by Google

tive of agriculture, industry, and transportation, which, through specific questionnaires, obtained the statistical data upon which the conclusions of the commission primarily rest.

One hundred and fifteen general committees, representing agriculture and industry, were established, and these in turn appointed subcommittees in the different sections, numbering approximately 200. The appointees to these committees were those whose knowledge and experience qualified them particularly to analyze the conditions of the phase which was assigned to them. In like manner executive committees of transportation were formed, and in turn appointed subcommittees throughout the country.

In cooperation with the transportation division, the executive committees in charge of railroad, electric, motor, and other branches of transportation worked out the questionnaires forwarded them by the commission and analyzed in minute detail the pertinent facts in their relation to agriculture and industry and transportation. The committees representing agriculture, industry and transportation, correlated their efforts where possible and at all times cooperated in the endeavor to arrive at the basic data called for by the commission.

The transportation division opened offices in Washington for the assembling and analysis of the data procured by this comprehensive field organization. It also called to Washington accredited representatives of agriculture, industry, and transportation to confer upon the details of the inquiry, to effect a better understanding of the relation of transportation to agriculture and industry, and to obtain an initial agreement as to the basic facts developed by the field organization.

The body of the report having been tentatively set up, a further analysis of the data and the findings was undertaken by an advisory board to the transportation division, which was called to Washington and requested to study a summary of the work accomplished thus far as presented in an agenda and working outline. This method was pursued in order that the commission might have the benefit of the views of accredited representatives of these three great branches of our economic life. The collection and assembling of the data in this report represent the combined efforts of over 1,600 people and the circulation of more than 250,000 questionnaires.

The commission did not undertake an investigation of the labor problem as affecting transportation, in so far as that problem involves the question of proper wages, for it felt that was outside of the scope of its inquiry. It does present the facts, however, as to labor costs in transportation, gathered from official reports, and it makes certain recommendations concerning the adjustment of labor disputes.

This commission is indebted to various Government departments, bureaus, and agencies, particularly the Interstate Commerce Commission, Department of Agriculture, Bureau of Public Roads, and many private industrial organizations, farm organizations, including the American Farm Bureau Federation, the National Board of Farm Organizations, and many others, the Bureau of Railway Economics, American Railway Association, industries and railroads, and many individuals, all of whom have cooperated with the commission in securing, analyzing, and compiling the data upon which the report is based.

Digitized by Google

In formulating the report the commission divided the inquiry into the following major subjects:

Economic relationship of agriculture, industry, and transportation.
Transportation by steam railroad.
Railroad management and organization.
Railroad finance.
Railroad express company.
Parcel post.
Electric railways.
Highway transportation.
Transportation by water.
Federal and State regulation of transportation.
Foreign railway systems.
History of railway transportation.

The recommendations and conclusions of the commission are reviewed in summary, which follows:

SUMMARY.

The commission makes the following recommendations:

1. That the transportation rates on many commodities, more especially the products of agriculture, bear a disproportionate relation to the prices of such commodities; that there should be immediate reductions in transportation rates applied to farm products and other basic commodities; and that reductions in rates upon the articles of higher value, or upon tonnage moving upon so-called "class rates," are not warranted, while the rates upon agricultural products and other basic commodities remain at their existing levels; that greater consideration should be given in the future by public rate-making authorities and by the railroads in the making of transportation rates to the relative value of commodities and existing and prospective economic conditions.

2. That the pyramided per cent advances in rates which have been authorized by the Interstate Commerce Commission or made by the United States Railroad Administration caused the dislocation of long-standing rate relationships between rates upon agricultural and industrial products between competitive enterprises and competitive sections of the country; that the railroads and the public rate-making bodies should seek to readjust rates of the country so as to preserve so far as practicable the general relationship of rates existing prior to 1918, with due regard to present and future changes in economic conditions.

3. That in establishing the general level of rates and commodity and class rates the Federal and State regulatory bodies give greater consideration to existing and prospective economic conditions and to the relationships existing between the price level of commodities and the level of transportation rates as well as the relationship existing between the price of different commodities, the weight of such commodities, and the space required for their transportation.

4. That regional agencies of the Interstate Commerce Commission be established whose duty it shall be to consider and adjudicate questions of regional application and to cooperate with the State

Digitized by Google

commissions with a view to minimizing conflicts between State and Federal regulations as to rates, facilities, and practices; that the State commissions have representation in such regional agencies in all cases in which intrastate rates, facilities, and practices over which the State commission has jurisdiction may be affected.

5. In view of the conclusion of the International Joint Commission this commission recommends that the Government enter into immediate negotiations with the Dominion of Canada for the conclusion of a treaty for the improvement of the St. Lawrence River through a commission directed to make the further study suggested by the International Joint Commission, and authorized to proceed with the work if its plans, including a plan of financing shall be approved by Congress and the Dominion of Canada.

6. Complete standardization as rapidly as possible of all freight equipment, except with respect to cubical and weight-carrying capacity—

(*a*) To reduce the initial cost.

(*b*) To reduce the number of necessary repair parts.

(*c*) To facilitate the repair of cars and the movement of trains.

(*d*) To make possible economies in maintenance of freight equipment.

(*e*) To reduce empty-car mileage on bad-order cars.

7. The unification and joint operation of facilities at terminals wherever such unification and joint operation will result in economy and better service.

8. Prompt consideration and adoption of a comprehensive plan for central control and distribution of freight cars—

(*a*) To meet currently and in full the requirements of shippers in each and every section of the country.

(*b*) To reduce empty-car mileage except that made necessary to protect originating territory.

(*c*) To meet demands in originating territory currently by a balancing movement of loaded and empty cars.

9. That railroads and shippers cooperate to secure the full utilization of the carrying capacity of cars wherever possible.

10. That the supply of box cars, coal cars, stock cars, and refrigerator cars is inadequate to meet the demand during normal periods of activity and should be rapidly augmented.

11. That special consideration should be given to increasing the available number and efficiency of refrigerator cars. Older and inefficient types of refrigerator and heater cars should be progressively retired.

12. That the number of cars in bad order exceeds all previous records, and unless bad-order cars are promptly repaired, the supply of serviceable cars will be materially impaired.

13. That a large proportion of the cars being used in interline movement are box cars and should be made fit for bulk grain loading; and all other classes of freight equipment should be promptly made suitable for all requirements, including general interchange throughout the country.

14. That the number of locomotives operating and owned by some railroads is inadequate to meet the need during business activity and it should be augmented.

Digitized by Google

15. That there is need for increase in terminal facilities generally, and that special consideration should be given to an increase in facilities at ports, including facilities for handling coal at tidewater.

16. That there should be complete correlation of ore and coal facilities at Lake Erie ports.

17. That permanent joint railroad and shippers' committees be organized to cooperate in carrying on a nation-wide campaign to reduce loss and damage of goods in transit.

18. That freight-revenue divisions should be promptly revised to the basis of two-figure percentages.

19. That regional clearing houses be established for the current settlement of debits and credits growing out of rate divisions.

20. That the railroads should adopt universal through waybilling of interline freight.

21. That the railroads be required to maintain complete cost data covering each item of expense with particular reference to the maintenance of equipment.

22. That the railroads be required to adopt better systems for checking the extent and value of repairs to equipment when made by lines other than the line owning the car.

23. That the railroads of the country establish regional traffic executives.

24. That the relations between the public and the railroads be improved, and a closer contact and better understanding established through the organization by the railroads of public relations departments, so that wherever possible conflicts between persons, industries, or localities and the railroads with respect to rates, facilities, and practices be settled by informal negotiation, with a view of reducing the necessity of resort to formal complaint and adjudication before the Interstate Commerce Commission.

25. That the Interstate Commerce Commission be directed by Congress as a part of its continuing duties to investigate the development and correlation of the various systems of transportation and their relation to agriculture, industry, trade, and commerce, and report to Congress from time to time as to the correlation of such transportation facilities and their better relation to agriculture, industry, trade, and commerce.

26. That the bill "To provide for classification of civilian positions within the District of Columbia and field service" (H. R. 8928) shall not apply to the employees of the Interstate Commerce Commission, but if the Interstate Commerce Commission employees are included under the classification bill, due regard shall be given to the peculiar character of the organization of the commission and the classification and duties of its employees.

27. That Congress continue to promote an adequate program of highway construction and maintenance, directed to the more effective correlation of highway transportation with rail and water transportation.

28. That the program of highway construction and the maintenance by States and counties be continued under the direction of

Digitized by Google

priations for research into methods of road construction and maintenance, density, character, and the effect of traffic be continued and regulation of traffic based upon the facts ascertained by such research.

29. That the several States cooperate in effecting a uniform basis for taxing motor trucks and other motor vehicles which shall fairly represent the reasonable proportion of the cost of highway construction and maintenance chargeable to such vehicles.

30. That a study be made of postal rates with a view of a readjustment of charges and the removal of present rate inconsistencies.

31. The Commission makes no recommendation with respect to Government aid to American shipping, but if Government aid is given to American shipping it ought to be given in such a way that the amount of such aid may be definitely known, and should be limited to such aid as will fairly represent the difference in capital and operating cost required by higher American standards and more burdensome navigation regulations, compared with foreign capital and operating costs and foreign navigation regulations.

The Commission makes the following findings:

1. That freight rates upon perishables normally take about one-third of the selling price, frequently running as high as two-thirds; that these rates in periods of low-price levels and slight demand constitute a very heavy burden upon this traffic. This is especially true, owing to the average length of haul of these commodities, which was shown to be more than 1,400 miles in a study of 9,476 shipments.

2. Prices of canned goods are practically back to pre-war levels. The existing freight cost per case is substantially lower in relationship to value of the product than the freight cost of the so-called basic commodities, including grains.

There is nothing in the Commission's investigation to show that rate reductions on canned goods should have preferential treatment while the rates on so many basic commodities remain at their existing levels.

3. That rates and sales margins on hay have been abnormally high in recent months and have greatly restricted its distribution. Reduction in both rates and margins must be had before there will be a normal resumption of shipments of hay, and in order that the producer may obtain a reasonable portion of the final sales price.

4. That freight rates on highly fabricated articles of wearing apparel, such as boots, shoes, dry goods, men's and women's suits, etc., are not a material factor in increasing or reducing prices of these commodities. The freight rate is frequently absorbed by the merchant, and where it is not so absorbed, but is made a part of the cost basis upon which margins and profits are figured, represents so small a proportion of the final sales price as not to be a material factor in the increase or reduction of such prices.

5. That imperative need exists for the organization of the statistics and knowledge of transportation and its relation to agriculture, industry, trade, and commerce through the establishment of private research and educational institutions under disinterested auspices for the purpose of promoting education in the principles, operations, and practices incident to transportation.

6. That greater uniformity is desirable in the requirements of State legislation and State regulatory bodies in regard to the length

Digitized by Google

of trains and crews required to man trains of different lengths and similar requirements affecting operation of railway systems.

7. The aggregate compensation paid to railway employees increased 151 per cent in 1920 over 1916 and 90.7 per cent in 1921 over 1916; the number of employees increased 384,830 in 1920 over 1916, or 23.3 per cent; and 14,204 in 1921 over 1916, or eight-tenths of 1 per cent. In most cases the aggregate number of hours worked increased in lower ratio than the aggregate compensation and the number of employees.

8. That the increase in efficiency of operation of transportation is shown by the fact that in 1890, the first year for which statistics were available, for every $100 investment in property 983 tons of freight were carried 1 mile and 163 passengers carried 1 mile; whereas in 1920 for every $100 investment in property 2,063 tons of freight were carried 1 mile and 231 passengers were carried 1 mile, an increase of 110 per cent in freight and 50 per cent in passenger traffic for each $100 of property investment. Property investment as reported to the Interstate Commerce Commission has increased 155.82 per cent, the tons carried 1 mile 438 per cent, and the passengers carried 1 mile 295 per cent in the same period.

9. That in 1921, for each 100 ton-miles yielding revenue the railroads produced 147.6 nonrevenue and tare ton-miles. The revenue producing ton-miles, constituting 40.3 per cent of the total, is therefore supporting nonproductive ton-miles equaling 59.7 per cent of the total. That the expense incident to the transportation of nonproductive tonnage must be met either by higher freight rates or a reduced return to the railroad companies.

That the significance of this is not generally understood by railroad officials and the public. That economical transportation of the products of agriculture and industry require a reduction in the tare or waste ton-miles.

10. That the revenue return to the railroads should be sufficient to enable them to sustain the value of their properties put to public use and to attract the capital required for the expansion and improvement of property, facilities, and service.

11. That sound railroad finance requires that a larger part of the capital necessary for railway development and equipment be secured by stock issues instead of by bond issues.

12. That the issuance of tax-free securities by Federal, State, and municipal government should be reduced to the lowest possible limits, so that taxation can be reduced and capital be allowed to accumulate for use at fair interest rates by agriculture, industry, and the railroads.

13. That a comparison of the operation of the railroads during the period of Federal control and under competitive management in the postwar period affords no conclusive basis as to the relative efficiency of Government and private operation. The conditions existing in both periods have been too abnormal to permit of sound comparison or accurate measurement of the relative efficiency in either. An examination of the operation of Government-owned railroads in foreign countries both before and after the war, however, does afford some basis for an estimate as to the relative efficiency with which private management in this country and Government manage-

Digitized by Google

ment in foreign countries have withstood and surmounted the difficulties attendant upon the dislocations and the abnormal conditions which followed the war period. It may be said that, measured by the relative performance and cost of service, private management in this country is more efficient at less cost than foreign governmental management.

14. That the daily, weekly, monthly, and yearly fluctuations in shipments of live stock are very marked. Railroads, shippers, and stockyards should cooperate to bring about a more even distribution of shipments at the live-stock markets.

15. That mine prices, freight rates, and sales margins on both bituminous and anthracite coal have very greatly increased since 1913. There has been practically no deflation in this industry, although prices were somewhat lower in 1921 than in 1920. Coal is an element in the cost of production of a very wide range of manufactured products, and increases in coal prices are promptly reflected and often multiplied in the final price of highly fabricated articles. A reduction in mine prices, freight rates, and sales margins on coal, especially bituminous coal, would probably be promptly reflected in improved business conditions.

16. That fertilizer and phosphate prices are now close to the prewar basis, except for the higher freight costs now prevailing.

17. That the weighted average of farm implement factory prices shows these prices, exclusive of power, equipment, and twine, to be 41 per cent above 1913; inclusive of power, equipment, and twine, these prices are now approximately 20 per cent above 1913.

Digitized by Google

CHAPTER I.

ECONOMIC RELATIONSHIP OF AGRICULTURE, INDUSTRY, AND TRANSPORTATION.

As farm products have value only if they can be consumed, their value is determined by the effective demand and supply at the various points of consumption. In the determination of the exact price which measures this value many factors must be considered.

As a rule the farms of the United States which produce the food of the people and yield farm products for export are located at a distance from the populous districts where the demand centers. Transportation is, therefore, of vital importance to the farmer, for without it his products can not be placed upon the market. A proper basis of transportation charges and an adequate transportation service, allowing the producer to market his products at a remunerative price, will enable the consumer to square his cost of living with his standard of living. Both the farmer and the transportation interests must cooperate so that this consuming demand can be met.

The prices for farm products at the primary markets are generally fixed by factors other than costs of transportation, but these costs are reflected in the prices realized by the farmer. In the case of products of low value shipped long distances, they are a material proportion of the price obtained by the producer. It is manifest that the prosperity of the farmer is dependent to a marked degree upon the transportation charges of these farm products. Regardless of the distance involved, these transportation charges must enable both the carrier and the producer to realize a profit from his operations. Therefore, so far as possible, freight rates should be adjusted to permit a free movement of all the surplus produced on the farms to the markets where it can be absorbed.

Table A1 herewith shows the relative area, population, value of manufactures, value of agricultural products, and volume of railroad freight traffic for the eastern part of the United States in comparison with the entire Nation. While this section contains but one-eighth of the area, it has nearly one-half the population, and produces more than two-thirds of the manufactured products, but only one-fourth of the agricultural products. To a large degree the problem of transportation of farm products in this country is to move them at reasonable rates from the producing sections outside into this densely populated consuming area.

Digitized by Google

TABLE A1.—*Relationship of eastern portion of the United States to th United States, 1920.*

	East.[1]		Total U Stat
	Amount.	Per cent.	
Area, square miles	375,784	12.42	
Population	50,615,764	47.88	10
Value of manufactures	$44,041,387,000	70.55	$62,42
Value of agricultural products not manufactured	$2,817,810,000	26.93	$10,19
Revenue ton-miles on Class I railroads	188,517,807,545	45.95	410,30
Tons originated	607,744,910	48.73	1,25

[1] For item of area, population, value of manufactures, and value of agricultural products, the States are included: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecti York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Ohio, Indiana, M and Illinois.

For revenue ton-miles on Class I railroads, the "eastern district" as used by the Interstate C Commission is used. This does not include all of Illinois nor the northern peninsula of Michigan include portions of West Virginia, Virginia, and Kentucky.

The course of the relationship of freight charges to farm p from 1909 to 1921, inclusive, is shown in Table A2 and char The five-year average from August 1, 1909, to July 31, 1914, is as 100 per cent of the average price of farm products, and the road revenue per net ton-mile from July 1, 1909, to June 30, 1 the nearest comparable figure in the statistics of the Interstate C merce Commission, is used as 100 per cent of the railroad cha From 1910 to 1916 the two lines moved side by side in very c relationship to each other. Then began a tremendous increase in price of farm products, until in June, 1920, it reached the maxim of 246. Railroad freight rates from 1916 to 1917 show practic no increase. From 1917 to 1920 they increased more slowly than the price of farm products.

TABLE A2.—*Railway revenue per revenue ton-mile, 1910–1921, compared w five-year average 1910–1914=100.*

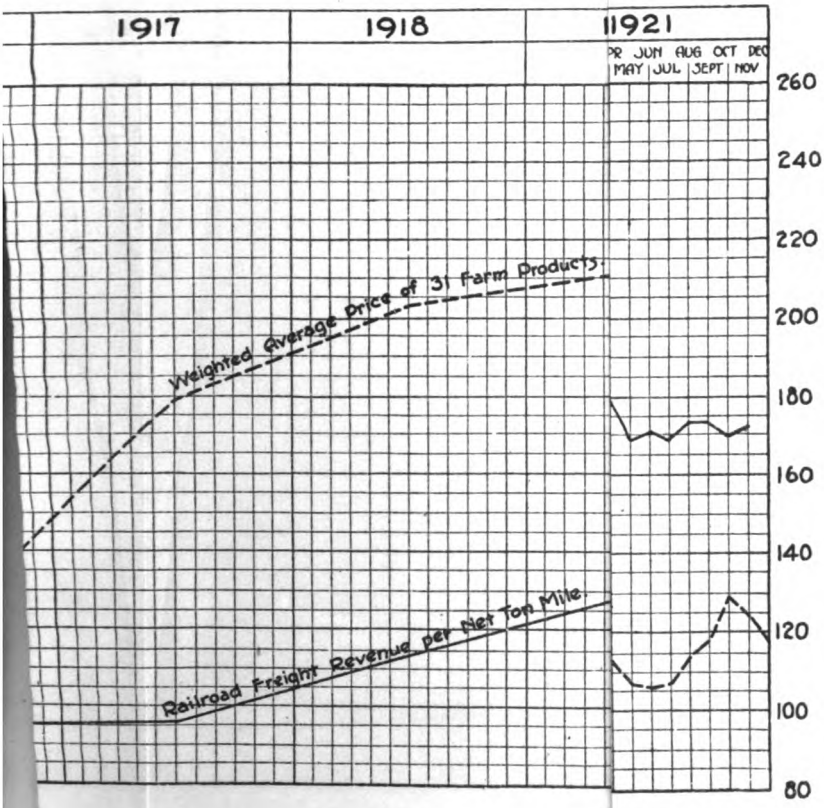
Year and month.	Revenue per revenue ton-mile.	Index figure.	Index figure, farm prices.	Year and month.	Revenue per revenue ton-mile.	Index figure.	Ind figu far pric
1910	$0.753	101	104	1920—Continued			
1911	.754	101	96	October	$1.226	164	
1912	.741	99	99	November	1.255	168	
1913	.729	98	99	December	1.209	162	
1914	.733	98	100	1921—			
1915	.732	98	100	January	1.210	162	
June 30, 1916	.707	95	.....	February	1.254	168	
December 31, 1916	.707	95	118	March	1.335	179	
1917	.717	96	179	April	1.334	179	
1918	.849	114	203	May	1.251	168	
1919	.973	130	212	June	1.278	171	
1920—				July	1.254	168	
January	.969	130	229	August	1.288	173	
February	.985	132	231	September	1.288	173	
March	.986	132	230	October	1.261	169	
April	.981	131	237	November	1.284	172	
May	.954	128	244	December	1.237	169	
June	.970	130	246				
July	.960	129	242	Five years July 1, 1909, to June 30, 1914	.746	100	
August	.936	125	225				
September	1.154	154	207				

In July, 1920, the slump began, which brought the index figure for farm products down from 246 in June, 1920, to 106 in June, 1921. In the same period railroad charges went up from 127 in July,

Digitized by Google

Chart A 1.

AILROAD FREIGHT RATES, 1910–1921.



Face p. 10.)

Digitized by Google

Digitized by Google

1920, to 171 in June, 1921. On the basis of the last monthly figures available, in October, 1921, farm products show an index figure of 102 and railroad rates of 169. In this period of falling prices for farm products the increased freight charges made the farmer feel more keenly the relationship of freight charges to the prices obtained for his products. On the basis of Table A2, Table A3 has been constructed to show the purchasing power of farm products in terms of transportation. This figure is obtained by dividing the index figures for farm products by the corresponding index figure for freight changes. While the purchasing power was about 100 in the previous years, it was in November, 1921, only 72. So far as transportation is concerned the farmer is suffering from a 72-cent dollar.

TABLE A3.—*Purchasing power of farm products in terms of transportation.*

Year and month.	Purchasing power.	Year and month.	Purchasing power.	Year and month.	Purchasing power.
1910	$1.03	1920—Continued.		1921—Continued.	
1911	.95	April	$1.78	April	$0.63
1912	1.00	May	1.85	May	.64
1913	1.01	June	1.89	June	.62
1914	1.02	July	1.89	July	.64
1915	1.02	August	1.74	August	.66
1916	1.24	September	1.34	September	.68
1917	1.86	October	1.16	October	.76
1918	1.78	November	.99	November	.72
1919	1.63	December	.88	December	.....
1920:		1921:			
January	1.76	January	.82		
February	1.75	February	.76		
March	1.74	March	.68		

Table A4 indicates the estimated value of commodities transported in the United States in accordance with the United States census of 1914. The total production of agricultural, manufactured, and mineral products is added to the imports, from which is made an estimated deduction of these same articles which do not move by railroad transportation. The estimated total value of $33,298,000,000 divided by the total tonnage of railroads, 1,094,000,000, gives an average value of $30.40 per ton. The average revenue per ton for the same period was $1.84; the proportion of freight to the value of goods transported as estimated is about 6.05 per cent.

TABLE A4.—*Value of commodities transported in United States, 1914.*

[000,000 omitted.]

Production:		
Products of agriculture		$9,849
Manufactures		24,246
Minerals		2,394
Total		36,489
Imports		1,894
Total		38,383
Deductions for local use:		
Products of agriculture	$2,202	
Manufactures	2,023	
Minerals	620	
Imports	240	
Total		5,085
Total amount transported		$33,298

Digitized by Google

Total tonnage carried by railroad	1,094
Value per ton	$30.46
Freight revenue (Class I and II roads)	$2,115
Revenue per ton	$1.84
Per cent freight to value of goods transported	6.05
Per cent freight to total production plus imports	5.26

In order to indicate the method of constructing rates the accompanying tables, A5 to A13, are given. Until the Interstate Commerce Commission authorized the general advance in rates effective August 26, 1920, rates were made as a rule on the basis of what the traffic would bear, keeping in mind also such factors as competition of other products, competition of other sources of supply, state of manufacture, cost of transportation, and the revenue needs of the carriers. The table shows briefly the history of selected rates on live stock, wool, eggs, grain, and hay on January 1, 1913, 1916, 1921, and 1922. The last four columns of each table show the relationship of the rates in 1916, 1921, and 1922 to the rate in effect January 1, 1913, which is indexed at 100.

Comparison of rates on live stock, grain, etc., January 1, 1913, and January 1, 1916, with rates in effect January 1, 1921, and January 1, 1922.

A5.—CATTLE.

	Rate in cents per 100 pounds.				Index figures.			
	1913	1916	1921	1922	1913	1916	1921	1922
TO CHICAGO FROM—								
Decatur, Ill.	11.3	11.3	20	25	100	100	176	221
Dixon, Ill.	9.3	9.3	16.5	16	100	100	177	172
Ripon, Wis.	12.0	14.5	24.5	22	100	120	204	183
Oconomowoc, Wis.	8.5	10.5	18	16	100	121	213	188
Alexandria, Minn.	29.75	29.75	50	45	100	100	168	151
Mankato, Minn.	25	25	42.5	38.5	100	100	170	154
Creston, Iowa.	23	23	39	35	100	100	170	152
Carrollton, Mo.	23	23	39	35	100	100	170	152
Springfield, Mo.	28.75	28.75	48.5	43.5	100	100	168	151
Williston, N. Dak.	49	49	75.5	60.5	100	100	154	123
Aberdeen, S. Dak.	38	38	61	50	100	100	160	131
North Platte, Nebr.	40.92	40.92	65	52	100	100	158	127
Grand Island, Nebr.	35.75	35.75	58	50	100	100	162	139
Emporia, Kans.	31.25	31.25	52	47	100	100	166	150
Great Bend, Kans.	38.75	38.75	62	50	100	100	160	129
Muskogee, Okla.	37.75	37.75	61	50	100	100	161	132
Shelby, Mont.	60	60	89.5	71.5	100	100	149	119
Laramie, Wyo.	48	48	73.5	59	100	100	153	123
TO KANSAS CITY FROM—								
Springfield, Mo.	17	17	29	26	100	100	170	153
Emporia, Kans.	11	11	19	17	100	100	172	154
Great Bend, Kans.	16.5	16.5	27.5	25	100	100	166	151
Grand Island, Nebr.	19	19	32.5	29.5	100	100	171	155
Muskogee, Okla.	21	21	36	32.5	100	100	171	154
Texarkana, Ark.	[1] 60	32	52.5	47.5	100	117	193	183
TO NEW YORK FROM—								
Lancaster, Pa.	15	15.8	31.5	28.5	100	105	210	190
Weedsport, N. Y.	15	15.8	31.5	28.5	100	105	210	190
Hagerstown, Md.	17	17.6	35	31.5	100	103	206	185
Staunton, Va.	24.5	25.7	46	41.5	100	104	187	169
Cleveland, Ohio.	20	20.9	47.5	43	100	104	237	215
Cincinnati, Ohio.	24.5	25.6	56	50.5	100	104	228	206
Indianapolis, Ind.	26	27.3	59.5	53.5	100	105	228	205
Louisville, Ky.	28	29.4	63	56.5	100	105	225	201
Chicago, Ill.	28	29.4	63	56.5	100	105	225	201
St. Louis, Mo.	33	34.4	70	63	100	104	212	190

[1] Rate in dollars per car is equal to 27.1 cents per 100 pounds on basis of 22,000 pounds to car.

Digitized by Google

Comparison of rates on live stock, grain, etc.—Continued.

A6.—HOGS.

	Rate in cents per 100 pounds.				Index figures.			
	1913	1916	1921	1922	1913	1916	1921	1922
TO CHICAGO FROM—								
Decatur, Ill	13.8	13.8	24	20	100	100	174	216
Byron, Ill	11.4	11.4	26	19	100	100	175	166
Ripon, Wis	16	16.4	27.5	25	100	102	171	156
Oconomowoc, Wis	11.5	13.0	23	20.5	100	113	200	178
Alexandria, Minn	35.5	35.5	57.5	50	100	100	161	140
Mankato, Minn	26	26	44	39.5	100	100	169	151
Caston, Iowa	23.5	23.5	40	36	100	100	170	153
Mason City, Iowa	23.5	23.5	40	36	100	100	170	153
Carrollton, Mo	23	23	39	35	100	100	169	152
Springfield, Mo	28	28	47.5	43	100	100	169	153
Williston, N. Dak	55	55	82.5	66	100	100	150	120
Aberdeen, S. Dak	42.5	42.5	67	53.5	100	100	157	125
North Platte, Nebr	46.45	46.45	72	57.5	100	100	155	123
Grand Island, Nebr	39	39	62	50	100	100	158	128
Emporia, Kans	34	34	55.5	50	100	100	163	147
Great Bend, Kans	43.5	43.5	68	54.5	100	100	156	125
Muskogee, Okla	46	46	71.5	57	100	100	155	123
Shelby, Mont	69	69	101.5	81	100	100	147	117
Laramie, Wyo	62.5	62.5	92.5	74	100	100	148	118
TO ST. LOUIS FROM—								
Springfield, Mo., single deck	21	21	34.5	31	100	100	164	147
Sedalia, Mo., single deck	17	17	29	26	100	100	170	152
Concordia, Kans	32	32	52.5	47.5	100	100	164	148
Muskogee, Okla	39	39	62	50	100	100	159	128
TO ST. PAUL FROM—								
New Ulm, Minn	13.5	12.8	21	19	100	94	155	140
Williston, N. Dak	46.75	39	62	50	100	83	132	105
Aberdeen, S. Dak	27.5	27.5	46.5	42	100	100	169	152
Shelby, Mont	59.5	59.5	88.5	71	100	100	148	119
TO OMAHA FROM—								
North Platte, Nebr	22.95	22.95	38.5	34.5	100	100	167	150
Grand Island, Nebr	15.72	15.72	26.5	24	100	100	168	152
Edgemont, S. Dak	42	42	66	53	100	100	157	126
Laramie, Wyo	44	44	68	54.5	100	100	154	123

A7.—SHEEP.

TO CHICAGO, ILL., FROM—								
Oconomowoc, Wis	11.5	11.5	23	20.5	100	100	200	178
Alexandria, Minn	34.25	34.25	56	50	100	100	163	145
Mankato, Minn	28	28	47.5	43	100	100	169	153
Mason City, Iowa:								
Single deck	25	25	42.5	38.5	100	100	170	154
Double deck	22.5	22.5	38	34	100	100	168	151
Springfield, Mo	30.5	30.5	50.5	45.5	100	100	165	149
Williston, N. Dak	55	55	83.5	67	100	100	151	121
Aberdeen, S. Dak	44	44	69	55	100	100	156	125
Belle Fourche, S. Dak	55	55	83.5	67	100	100	151	121
North Platte, Nebr., double deck	40.92	40.92	65	52	100	100	158	127
Grand Island, Nebr., double deck	35.75	35.75	58	50	100	100	162	140
Emporia, Kans., single deck	40	40	63.5	51	100	100	158	127
Great Bend, Kans., single deck	44	44	69	55	100	100	156	125
Muskogee, Okla.:								
Single deck	49.25	49.25	76.5	61	100	100	155	123
Double deck	37.75	37.75	61	50	100	100	161	132
Shelby, Mont., double deck	69	69	101.5	81	100	100	147	117
Laramie, Wyo., double deck	51	51	77.5	63	100	100	151	123
TO ST. PAUL FROM—								
Alexandria, Minn.:								
Single deck	14.25	15.7	26.5	24	100	110	186	168
Double deck	14.25	13.9	23.5	21	100	97	164	147

Digitized by Google

Comparison of rates on live stock, grain, etc.—Continued.

A7.—SHEEP—Continued.

	Rate in cents per 100 pounds.				Index figures.			
	1913	1916	1921	1922	1913	1916	1921	1922
TO ST. PAUL FROM—continued.								
New Ulm, Minn.:								
Single deck	13.5	13.5	22.5	20.5	100	100	166	151
Double deck	13.5	12	19.5	17.5	100	88	144	137
Williston, N. Dak.:								
Single deck	36.5	36.5	58.5	50	100	100	160	136
Double deck	36.5	36.5	58.5	50	100	100	160	136
Aberdeen, S. Dak.:								
Single deck	24	24	40.5	36.5	100	100	169	152
Double deck	24	24	40.5	36.5	100	100	169	152
Belle Fourche, S. Dak.: Double deck	55	55	83.5	67	100	100	152	121
Miles City, Mont.: Double deck	39	39	61.5	50	100	100	158	128
Shelby, Mont.:								
Single deck	59.5	61.5	91.5	73	100	103	153	122
Double deck	59.5	61.5	91.5	73	100	103	153	122
TO OMAHA FROM—								
North Platte, Nebr.:								
Single deck	22.1	22.1	37	33.5	100	100	167	151
Double deck	17.42	17.42	29.5	26.5	100	100	169	152
Grand Island, Nebr.:								
Single deck	15.3	15.3	25.5	23	100	100	166	150
Double deck	12.32	12.32	21	19	100	100	170	154
Yankton, S. Dak	22.5	22.5	38	34	100	100	168	151
Laramie, Wyo.: Double deck	35	35	56	50	100	100	160	142
Sheridan, Wyo.: Double deck	39	39	61.5	50	100	100	157	128
Denver, Colo.:								
Single deck	54.4	54.4	83	66.5	100	100	152	122
Double deck	34	34	55.5	50	100	100	163	147
Billings, Mont.: Double deck	44	44	68	54.5	100	100	154	123
Ogden, Utah	60	62	92	73.5	100	103	153	122
TO ST. LOUIS, MO., FROM—								
Springfield, Mo.:								
Single deck				32.5				
Double deck	23	23	36	32.5	100	100	156	141
Emporia, Kans.:								
Single deck	32.5	32.5	53.5	48	100	100	164	147
Double deck	22.5	22.5	38	34	100	100	169	151
Muskogee, Okla.:								
Single deck	41.75	41.75	66	53	100	100	158	126
Double deck	29	29	48.5	43.5	100	100	167	150
Enid, Okla.:								
Single deck	39.5	39.5	63.5	51	100	100	160	129
Double deck	30.25	30.25	50.5	45.5	100	100	166	150
Amarillo, Tex.:								
Single deck	48	48	74.5	59.5	100	100	155	123
Double deck	40	40	63.5	51	100	100	157	127
TO NEW YORK FROM—								
Lancaster, Pa	17.5	18.4	37	33.5	100	105	211	191
Cleveland, Ohio:								
Single deck	21.5	22.4	56.5	51	100	104	262	237
Double deck	21.5	22.4	47.5	43	100	104	220	200
Cincinnati, Ohio:								
Single deck	26	27.4	68	61	100	105	262	234
Double deck	26	27.4	56	50.5	100	105	215	194
Indianapolis, Ind.:								
Single deck	28	29.3	71.5	64.5	100	104	255	230
Double deck	28	29.3	59.5	53.5	100	104	212	191
Louisville, Ky.:								
Single deck	30	31.5	76.5	69	100	105	255	230
Double deck	30	31.5	63	56.5	100	105	210	188
Chicago, Ill.:								
Single deck	30	31.5	76.5	69	100	105	255	230
Double deck	30	31.5	63	56.5	100	105	210	188
St. Louis, Mo.:								
Single deck	35	36.5	83.5	75	100	104	238	214
Double deck	35	36.5	70	63	100	104	200	180

Digitized by Google

Comparison of rates on live stock, grain, etc.—Continued.

A8.—WHEAT.

	Rate in cents per 100 pounds.				Index figures.			
	1913	1916	1921	1922	1913	1916	1921	1922
TO CHICAGO FROM—								
Bozeman, Mont.	42.5	37.5	63	55.5	100	88	148	130
Larimore, N. Dak.	.....	22	35.5	30.5	.....	100	161	138
Aberdeen, S. Dak.	22	22	39.5	34.5	100	100	179	156
York, Nebr.	23.05	23.05	39.5	34.5	100	100	171	149
Fort Dodge, Iowa.	14.5	14.5	24.5	21.	100	100	168	144
TO ST. LOUIS FROM—								
Des Moines, Iowa.	10.9	10.9	21.5	18	100	100	192	165
Lyons, Kans.	22	22	37	32.5	100	100	168	147
California, Missouri.	11	10.5	17.5	15.5	100	95	159	140
Holdrege, Nebr.	22.6	22.6	38	33	100	100	168	146
TO MINNEAPOLIS FROM—								
Stephens, Minn.	11.5	11.3	19	16.5	100	98	165	143
Yankton, S. Dak.	14.5	14.5	24.5	21	100	100	168	144
La Moure, N. Dak.	14.5	14.5	24.5	21	100	100	168	144
Kalispell, Mont.	40	35	54.5	48	100	87	136	120

A9.—CORN.

TO CHICAGO FROM—								
Des Moines, Iowa.	12.5	12.5	23.5	18.5	100	100	188	148
Norcross, Minn.	17	15.8	30.5	24	100	92	179	141
La Moure, S. Dak.	22	22	39.5	30.5	100	100	179	138
Yankton, S. Dak.	20.5	21	36	28	100	102	175	136
Holdrege, Nebr.	22.9	22.9	43	34	100	100	187	148
TO ST. LOUIS FROM—								
Fort Dodge, Iowa.	13.3	13.3	25.5	20.5	100	100	191	154
York, Nebr.	17.35	17.35	34.5	27	100	100	198	155
Topeka, Kans.	13.5	13.5	29	23	100	100	214	170

A10.—EGGS.

TO NEW YORK FROM—								
Chicago, Ill.	65	68.3	105	94.5	100	105	161	145
San Francisco, Calif.	265	200	333.5	300	100	75	125	113
Petaluma, Calif.								
Eau Claire, Wis.	100.5	103.8	165	148.5	100	103	164	147
Corinth, Miss.	120	120	200	180	100	100	166	150
Glasgow, Ky.	101	101	160	144.5	100	100	158	142
Cadillac, Mich.	71.5	75.1	111.5	100.5	100	105	155	140
St. Louis, Mo.	76	79.9	123	110.5	100	105	161	145
Rolfe, Iowa.	110	111.3	178	160	100	101	162	145
Logansport, Ind.	63	66.3	102	91.8	100	105	161	145
Marion, Ohio.	50	52.6	81	73	100	105	162	146
TO CHICAGO FROM—								
San Francisco, Calif.	245	200	333.5	300	100	81	136	122
Petaluma, Calif.								
Abilene, Kans.	68	68	115	103.5	100	100	169	152
Rolfe, Iowa.	45	43	73	65.5	100	95	162	145
Omaha, Nebr.	45	45	76.5	69	100	100	170	153
Florence, Ala.	100	100	166.5	150	100	100	166	150

A11.—DRESSED POULTRY.

From Chicago to New York:								
Carload.	50	52.5	105	105	100	105	210	210
Less than carload.	75	78.8	157.5	157.5	100	105	210	210
From Emporia, Kans., to Chicago:								
Carload.	58	58	98	88	100	100	168	151
Less than carload.	124	116	196	196	100	93	158	158

Digitized by Google

Comparison of rates on live stock, grain, etc.—Continued.

A11.—DRESSED POULTRY—Continued.

	Rate in cents per 100 pounds.				Index figures.			
	1913	1916	1921	1922	1913	1916	1921	1922
From Fort Dodge, Iowa, to Chicago:								
Carload	42	39	66	59.5	100	92	157	141
Less than carload	72	65	110	110	100	90	153	153
From San Francisco to Chicago:								
Carload	245	200	333.5	300	100	81	137	122
Less than carload	340	340	566.5	566.5	100	100	166	166
From San Francisco to New York:								
Carload	265	200	333.5	300	100	75	126	113
Less than carload	370	370	616.5	616.5	100	100	166	166
From Lincoln, Nebr., to Chicago:								
Carload	59	49	83	74.5	100	99	166	148
Less than carload	85	85	144	144	100	100	169	169
From Florence, Ala., to Baltimore, Md.:								
Carload	72	72	120	120	100	100	166	166
Less than carload	92	92	153.5	153.5	100	100	166	166

A12.—CHEESE.

FROM PLYMOUTH, WIS., TO—								
New York:								
Carload	55.85				100			
Less than carload	55.85	58.35	110	99	100	104	196	177
Chicago:								
Carload	18	18	30.5	27.5	100	100	169	153
Less than carload	22.5	22.5	38	34	100	100	168	151
Milwaukee:								
Carload	10	10	17	15.5	100	100	170	155
Less than carload	12	12	20.5	18.5	100	100	170	154
Kansas City:								
Carload	45	45	76.5	69	100	100	170	153
Less than carload	65	65	110	99	100	100	169	152
San Antonio:								
Carload	128	128	216	194.5	100	100	168	151
Less than carload	156	156	263.5	237	100	100	168	151
Denver:								
Carload	110	110	185.5	167	100	100	168	151
Less than carload	145	145	245	220.5	100	100	168	152

A13.—WOOL.

From—	To Boston.							
	Rates, in cents, per 100 pounds (in sacks, except as specified).				Index figures.			
	1913	1916	1921	1922	1913	1916	1921	1922
Columbus, Ohio	56	45.4	86	71	100	81	153	139
Lansing, Mich	52.5	54.9	101	91	100	104	192	173
Lemmon, S. Dak	123	125.5	215	194	100	102	174	157
Miles City, Mont	134	136.5	237	213.5	100	101	176	159
Rawlins, Wyo.[1]	127	129.2	229.5	208	100	101	180	166
Alamosa, Colo	178	157	262	236	100	88	147	132
Albuquerque, N. Mex	154	154	256.5	229.5	100	100	166	149
Boise, Idaho	200	198	346.5	312	100	99	173	156
Weiser, Idaho	202	196	333.5	300	100	97	166	146
Reno, Nev	189	176	308.5	276	100	93	162	146
Pendleton, Oreg	180	172	285.5	257	100	96	158	142
Portland, Oreg	[2] 150	150	250	225	100	100	166	150
	[3] 100	100	166.5	150	100	100	166	150
Red Bluff, Calif	221	221	248	223	100	100	112	101
San Francisco, Calif	[2] 130	130	216.5	195	100	100	166	150
	[3] 109	100	166.5	150	100	100	166	150

[1] In compressed bales. [2] Scoured in bales. [3] In grease, in bales.

Digitized by Google

This commission has compiled a large amount of data to show the economic relationship of freight rates to the prices of agricultural products. In compilation of such information data was secured from the various market points showing the prices actually paid by the wholesaler for these farm products as near as possible to the third Tuesday of each month during the seasons of 1913, 1916, and 1921. Similar information was then secured from the country shipping points showing the prices a few days earlier, in order to allow for the time in transit. An addition of the freight rate to this country price would show the margin or spread upon which the city dealer operated.

This method of making comparisons is, of course, subject to various objections. This commission met a great deal of difficulty in matching grades, particularly in the case of wool and fruits and vegetables. In other cases it was impossible to secure data throughout the years. Furthermore, it was impossible in every case to secure a weighted average of prices either at the market or on the farm, and it has been necessary to use a mean between the high and low point in the construction of the economic relationship charts.

The tables and charts in connection with live stock were prepared in a slightly different manner, as explained on page 118.

Table A14 shows the zone express rates applicable on second-class matter per 100 pounds applying on all articles of food and drink.

Tables A15 and A16 show typical express rates applying between typical points of production and consumption in carload and less than carload lots on fruits and vegetables per 100 pounds, from 1914 to 1921, inclusive.

Table A17 shows the express rates applying on butter, cheese, dressed poultry, and eggs from different points of production to typical points of consumption in carload and less than carload lots from 1914 to 1920, inclusive.

Table A18 shows the carload rate in cents per 100 pounds on berries, fruits, and vegetables from certain typical points of production in the Southwest to certain centers of consumption.

Table A19 shows percentage increase in second-class express rates, 1914 to 1920, inclusive.

FRUITS AND VEGETABLES.

Table A20 shows the tonnage of fruits and vegetables originating and carried annually in the United States during each of the past 23 years. In 1899 originating tonnage of these commodities amounted to 4,582,573 tons. The annual movement steadily increased until 1919, when Class I roads were credited with originating 19,726,069 tons, or more than four times the tonnage of 1899.

Including shipments of fresh, dry, and canned fruits and vegetables, the annual movement during the past seven years (1915 to 1921) has ranged from 950,000 to 1,200,000 carloads.

Digitized by Google

TABLE A20.—*Fruits and vegetables originated and handled by rail carriers, 1899–1921.*

[Interstate Commerce Commission annual reports.]

Year.	Originated.		Carried.	
	Carloads.	Tons.	Carloads.	Tons.
For all operating roads:				
1899		4,582,573		11,635,845
1900		5,213,210		13,106,026
1901		5,846,184		14,508,551
1902		6,295,028		14,501,988
1903		7,120,190		17,033,898
1904		7,833,914		18,832,436
1905		9,230,535		21,447,415
1906		8,921,262		20,502,423
1907		9,719,117		21,982,354
1908		9,516,962		22,136,182
1909		9,762,769		24,298,311
1910		11,339,921		27,968,788
For Class I roads:				
1911		11,084,010		27,620,942
1912		12,130,061		29,606,291
1913		15,424,690		34,724,817
1914		16,034,696		37,986,613
1915		17,133,451	2,488,753	40,566,680
1916		17,408,533	2,467,586	40,221,655
Calendar years: [1]				
1917		17,678,958	2,646,987	43,145,895
1918		18,737,419	2,740,752	44,674,265
1919		19,726,069	3,127,390	50,976,489
1920	[2] 983,679	17,252,471	2,725,030	48,328,798
1921	984,643	16,468,498	2,862,868	47,702,809

[1] The basis of calendar years was not adopted until 1916 and quarterly reports were not available previous to 1920, hence the tonnage for the fiscal years can not be figured from 1917 to 1921.

[2] Actual carloads taken from quarterly reports to Interstate Commerce Commission.

Explanation: The figures 1899–1919 include fresh fruits and vegetables, dried fruits and vegetables, and canned fruits and vegetables. The figures 1920–21 include fresh fruits, dried fruits and vegetables, and all canned food products. Fresh fruits and vegetables were not segregated in the Interstate Commerce Commission reports until the calendar year 1920. Dried fruits and vegetables and all canned food products have been added to fresh fruits and vegetables for the years 1920 and 1921 for the purpose of comparison. In so far as canned food products include other commodities than fruits and vegetables the 1920 and 1921 figures are in excess of the tonnage of fresh, dried, and canned fruits and vegetables actually originated and handled.

1920 MOVEMENT.

In 1920, due to transportation difficulties, increased rates, and economic conditions, the volume of tonnage transported by the railroads fell off sharply, notwithstanding the fact that the commercial crop of fruits and vegetables was the largest of record.

1921 MOVEMENT.

During the year 1921 there was a further falling off in volume, the originating tonnage being the lightest since 1914 (Table A20) and 17 per cent less than in 1919. For the year 1921, Class I rail carriers reported originating tonnage of 824,109 cars (12,663,889 tons) of fresh fruits and vegetables and 46,978 cars of dried fruits and vegetables. It will be observed that while the number of carloads of fresh fruits and vegetables was greater in 1921 than in 1920, the actual tonnage was less, indicating a lighter load per car. There are no records to show the movement of canned fruits and vegetables, except as included in all canned goods.

Digitized by Google

AVERAGE LOAD PER CAR.

The average load per car of fresh fruits and vegetables in 1920 was 15.97 tons and for 1921, 15.36 tons.

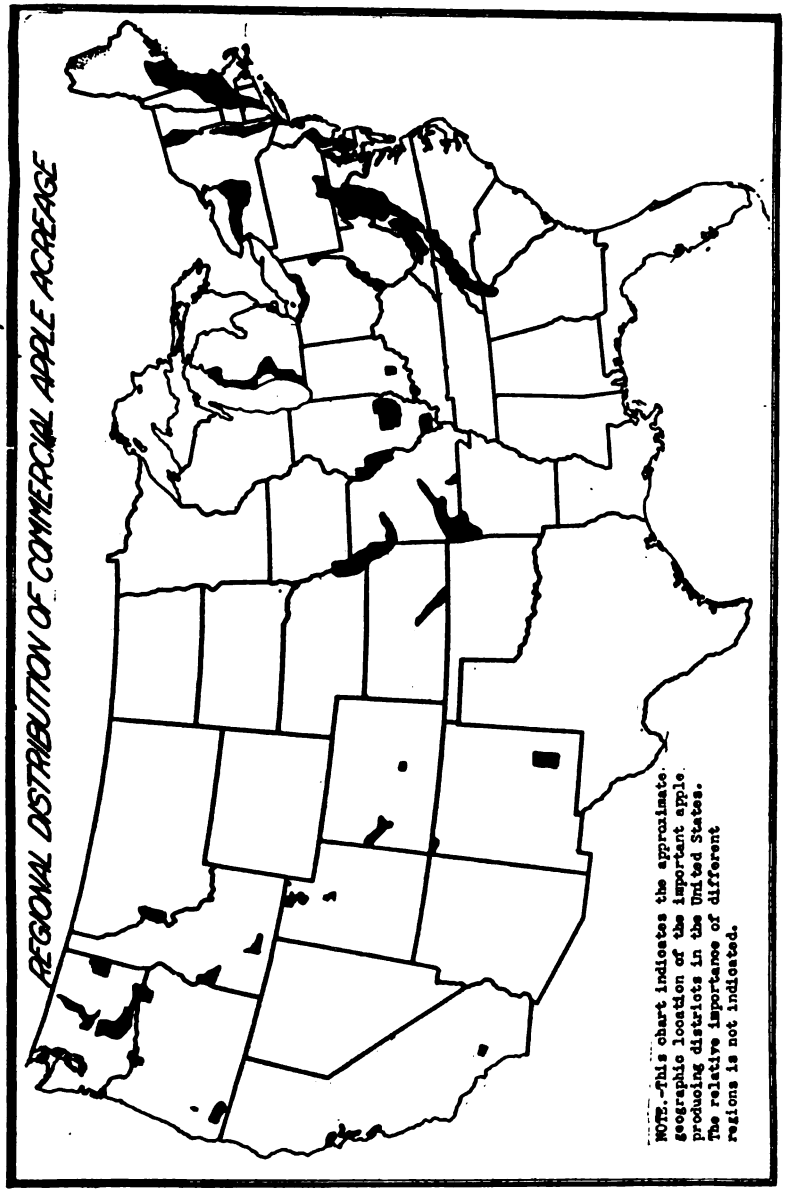


Chart A 2.
REGIONAL DISTRIBUTION OF COMMERCIAL APPLE ACREAGE
NOTE.-This chart indicates the approximate geographic location of the important apple producing districts in the United States. The relative importance of different regions is not indicated.

SPECIALIZATION AND CENTRALIZATION.

Commercial fruit and vegetables growing in the United States experienced a noticeable change in the 20 or 30 years prior to

Digitized by Google

1921, and more particularly in the two decades after 1900. It is no longer a local, semicommercial or general farm enterprise, but has

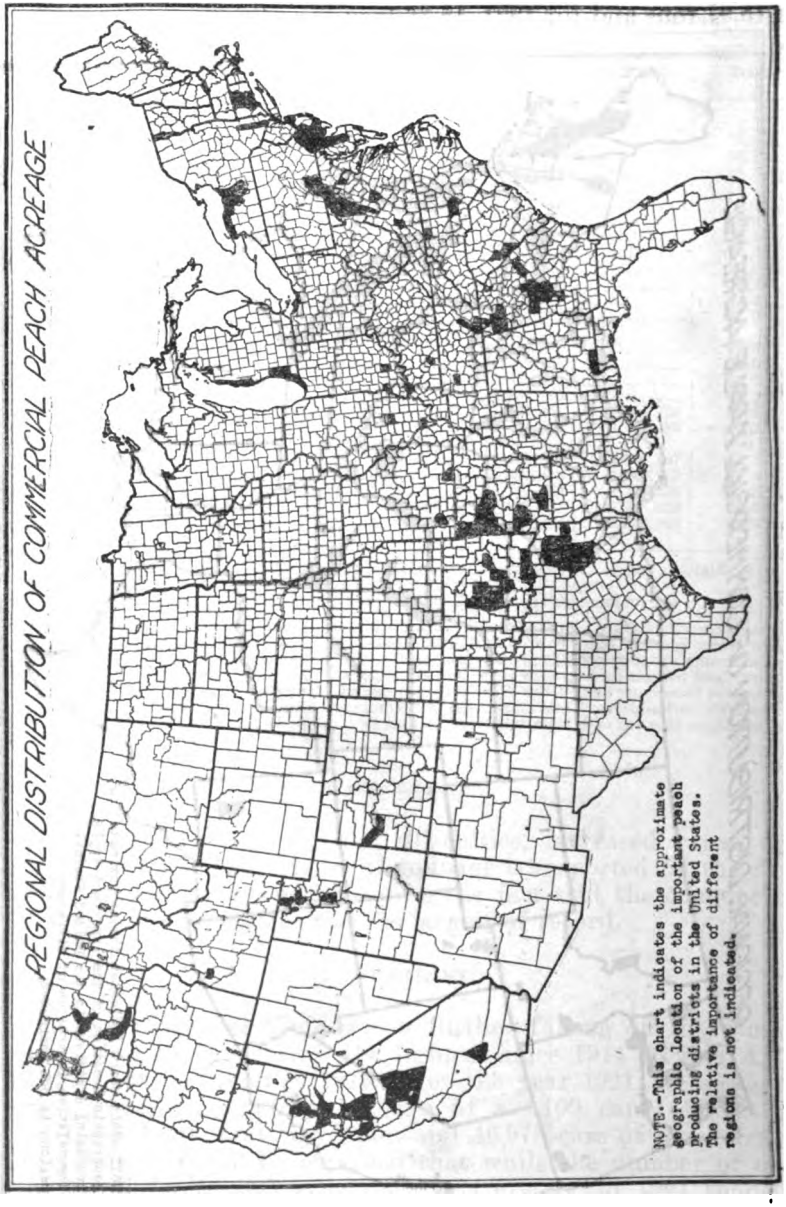

REGIONAL DISTRIBUTION OF COMMERCIAL PEACH ACREAGE
NOTE.-This chart indicates the approximate geographic location of the important peach producing districts in the United States. The relative importance of different regions is not indicated.

Chart A 3.

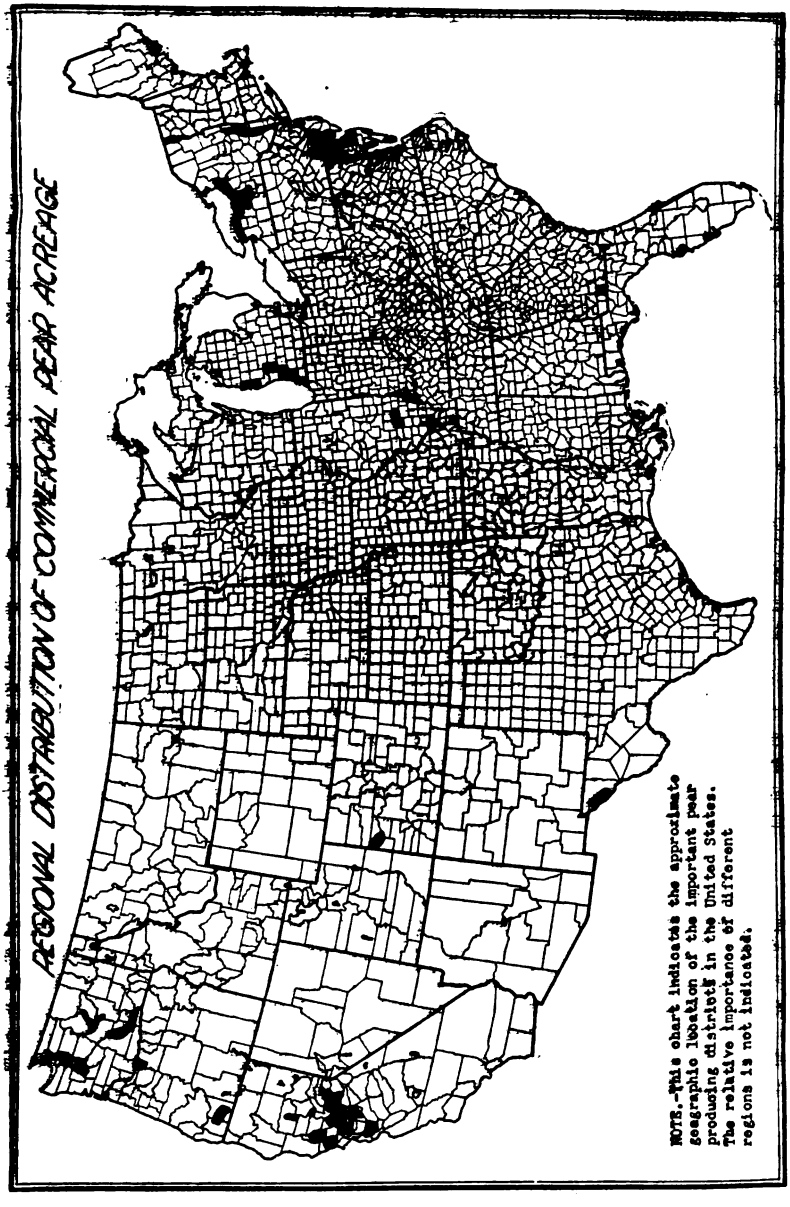
developed into a highly specialized and scientific industry of national proportions.

Production has been centralized in certain favored localities. (Charts A2 to A4, inclusive.) For example, certain fertile valleys

Digitized by Google

and districts in the far West supply a very large portion of the fresh fruits and vegetables consumed in the eastern cities and towns. The development of the fruit and vegetable industry in the far West

Chart A 4.


REGIONAL DISTRIBUTION OF COMMERCIAL PEAR ACREAGE
NOTE.—This chart indicates the approximate geographic location of the important pear producing districts in the United States. The relative importance of different regions is not indicated.

has been an important factor in increasing rail movement. The 1921 crop of boxed apples produced in Colorado and States west amounted to over 50,000 cars. Twenty years ago the movement of boxed

Digitized by Google

apples was practically negligible. The Imperial Valley of California has shipped as many as 16,000 cars of fruits and vegetables in a single season. Twenty years ago this region was a desert.

Roughly speaking, one-half of all the commercial fruits and vegetables produced in this country are grown west of the Mississippi River. Thousands of cars of these commodities are moved across the entire continent. Production and distribution have been developed on a scale unknown to other countries.

MOVEMENT VIA PANAMA CANAL.

An interesting feature of the transportation of fruits and vegetables is the development of an export and intercoastal movement of Pacific coast fruits, principally apples and citrus, moving by water from Pacific coast ports via the Panama Canal. The movement started in 1920. During the 1920–21 season 131,140 boxes of apples were exported from Pacific coast ports to European markets via the canal. The intercoastal movement of apples has thus far been confined to a few thousand boxes moved during the 1921–22 season. The movement of citrus fruits via the canal began in January, 1921. During the calendar year ended December 31, 1921, the intercoastal movement of California citrus fruits amounted to 179,446 boxes and in addition there were 23,855 boxes exported to foreign markets via the Panama Canal.

Thus far the intercoastal fruit and vegetable movement has been confined largely to citrus fruit, while the export movement via the canal has consisted largely of apples. The water carriers engaged in the intercoastal movement of fruits and vegetables have not as yet provided suitable terminal facilities at Atlantic coast ports, and the inability of the steamship lines to reach the desired wholesale markets has had a retarding influence upon the growth of intercoastal traffic. The movement by water from the Pacific coast, however, is a recent development; it has already shown rapid increase in volume and promises to be an increasingly important factor in the transportation of fruits and vegetables.

LENGTH OF HAUL.

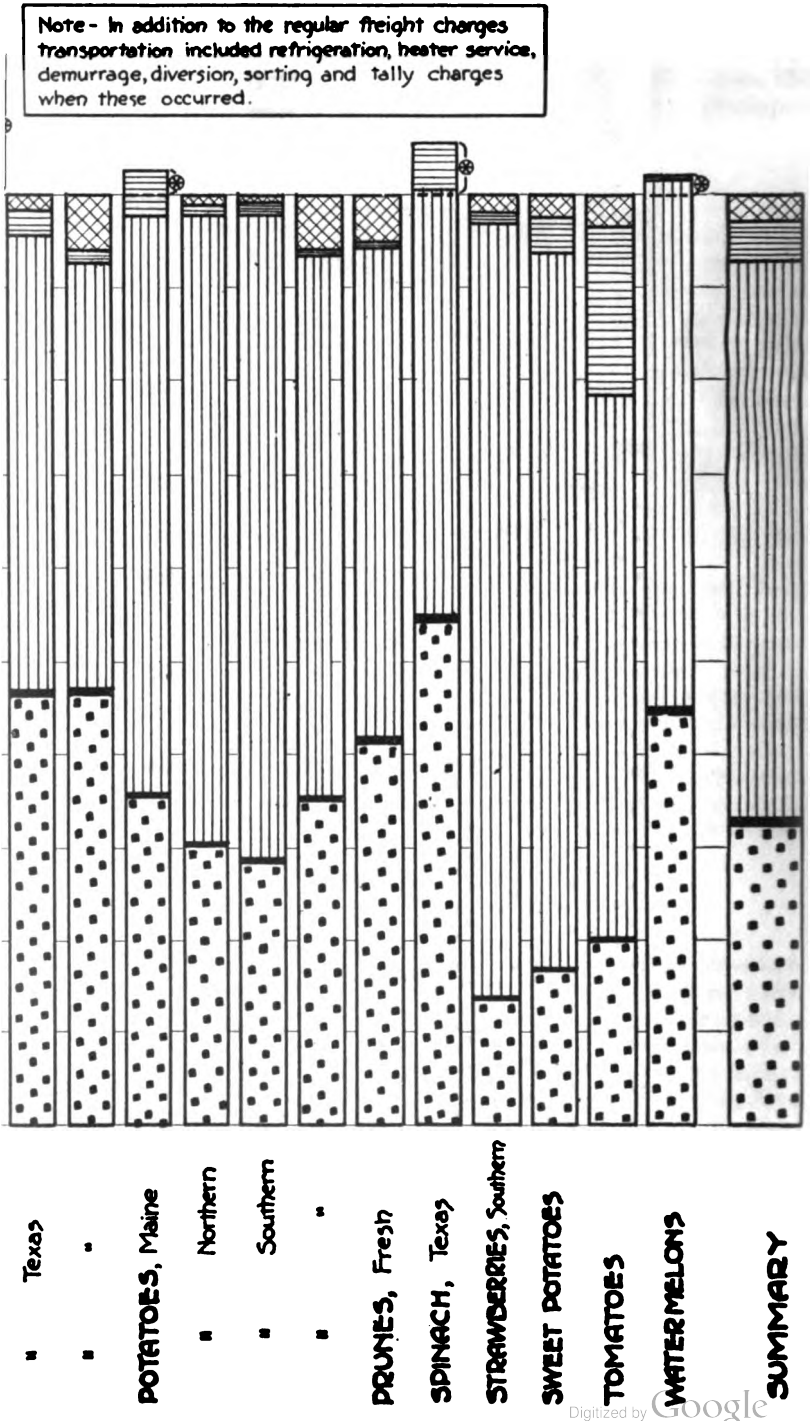
A study of 9,476 representative cars received at primary markets during the 1920–21 season reveals an average haul of about 1,400 miles. (Table A21 and chart A5.) While exact data are not available on the total number of cars moved, it is probable that the average haul on fruits and vegetables is longer than on any other important line of commodities moving by freight. The prevailing movement is from West to East and from South to North.

Digitized by Google

9,476 CARS OF REPRESENTATIVE FRUITS AND VE

AVERAGE HAUL ABOUT 1,

Digitized by Google



Digitized by Google

TABLE A21.—*Number of cars moved, long and short haul—Approximate length of haul of 9,476 representative cars fresh fruits and vegetables arriving in the cities of Boston, Chicago, New York, Philadelphia, Pittsburgh, and other cities during the months of September, 1920, to July, 1921.*

[Short haul means a haul of under 700 miles; long haul means a haul of over 700 miles.]

Commodity.	Long haul purchased and commission.	Short haul purchased and commission.	Commodity.	Long haul purchased and commission.	Short haul purchased and commission.
	Cars.	*Cars.*		*Cars.*	*Cars.*
Barrel apples	.....	2,022	Miscellaneous fruits	523	.....
Box apples	1,466	.....	Northern onions	.....	1,007
Bulk apples	.....	18	California onions	10	.....
Asparagus	6	.....	Texas onions	395	.....
Northern cabbage	.....	331	Maine potatoes	.....	295
Southern cabbage	60	.....	Florida potatoes	63	.....
California cabbage	20	.....	Southern potatoes	16	.....
Texas cabbage	65	.....	Northern potatoes	.....	355
California cantaloupes	431	.....	Prunes	48	.....
Florida citrus	204	.....	Texas spinach	652	.....
California cauliflower	90	.....	Strawberries	76	37
Florida and California celery	147	.....	Sweet potatoes	.....	56
Grapes	140	83	Tomatoes	104	.....
California lettuce	617	.....	Watermelons	75	.....
Florida lettuce	6	.....	Total number of cars	5,238	4,238
Miscellaneous vegetables	24	34	Average haul, miles	2,282	417

On long-haul traffic representing 56 per cent of the total number of cars covered in this investigation the average haul was about 2,282 miles.

On short-haul traffic representing 44 per cent of the total number of cars the average haul was about 417 miles.

Average haul on all cars covered was about 1,400 miles.

IMPORTANCE OF TRANSPORTATION.

The concentration of production in limited areas, oftentimes many hundreds and even thousands of miles from primary markets, emphasizes the importance of transportation.

In studying transportation we must first consider the perishable nature of the commodities involved. Fresh fruits and vegetables differ in every way from staple manufactured, nonperishable commodities. They are living, breathing organisms constantly progressing toward maturity or deterioration. Shippers and handlers of these commodities must work under constant pressure of time. For this reason special importance attaches to certain phases of transportation, such as refrigeration in transit, heater service, expedited movement, and diversion and reconsignment. Once produced, fruits and vegetables must either be placed in safe storage or be moved speedily toward consuming markets. It is necessary in many cases for shippers to start cars from producing regions to important gateways when the purchaser or ultimate destination is not known. In this manner commodities are brought more quickly into the vicinity of consuming markets and are later diverted or reconsigned in accordance with market needs and developments.

PEAK MOVEMENT.

No complete data are available on the movement of fresh fruits and vegetables by months. Partial shipment reports by the Department of Agriculture are shown in Table A22.

The heaviest movement occurs during the month of October.

While some spread may be given to the shipping season of these commodities by holding them longer at point of origin, this question

Digitized by Google

must be considered with relation to the problem of marketing and distribution. Furthermore, their seasonal and perishable nature makes a peak movement inevitable.

TABLE A22.—*Statement showing the relative number of cars loaded with green fruits and vegetables, by districts, years 1918 to 1921, inclusive.*

[These figures reflect the relative monthly movement but can not be regarded as indicating the total movement for the United States as a whole. For total movement by years see Table 161.]

	District No. 1—Alabama, Arkansas, Florida, Georgia, Kansas, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.				District No. 2—Arizona, California, Nevada, and New Mexico.			
	1918	1919	1920	1921	1918	1919	1920	1921
January	3,854	6,453	8,192	10,236	3,831	7,374	7,265	8,506
February	4,017	5,966	9,462	10,065	3,828	6,504	6,496	8,655
March	6,370	6,718	11,715	16,622	4,743	8,402	8,031	10,941
April	12,130	9,294	11,246	20,869	4,192	7,728	5,803	9,443
May	20,493	15,775	19,107	19,976	4,090	8,609	9,866	10,144
June	27,424	24,615	27,954	33,801	9,199	14,918	15,415	16,906
July	29,972	34,031	36,972	38,305	8,038	17,664	17,937	17,846
August	4,094	8,376	10,271	10,006	14,255	17,839	19,204	18,081
September	3,588	6,559	5,838	3,463	12,199	17,876	16,712	22,037
October	5,156	8,832	8,604	4,294	11,178	15,895	15,503	20,632
November	6,625	6,784	5,678	5,504	5,592	10,383	9,171	9,189
December	6,475	7,081	7,983	6,482	6,126	6,753	7,536	6,353
Total	130,198	139,599	163,922	179,573	87,271	139,945	138,941	161,354

	District No. 3—Colorado, Utah, and Wyoming.				District No. 4—Idaho, Montana, Oregon, and Washington.			
	1918	1919	1920	1921	1918	1919	1920	1921
January	1,163	1,475	758	1,428	3,983	2,349	4,208	3,442
February	1,066	1,157	566	993	3,139	2,079	3,169	2,755
March	1,836	1,326	485	781	3,146	2,235	3,128	3,047
April	1,563	1,017	103	514	1,537	2,347	1,632	2,442
May	833	868	37	207	1,167	1,062	708	1,307
June	186	322	5	19	436	617	226	673
July	124	198	219	554	273	594	813	830
August	3,245	3,546	1,975	4,813	3,598	5,107	3,082	5,857
September	6,420	8,602	6,343	8,782	3,437	7,202	5,360	8,985
October	5,412	6,397	6,138	6,702	9,087	16,178	12,263	22,892
November	1,910	1,858	2,773	1,925	7,110	11,071	9,976	12,911
December	530	552	876	982	3,543	3,792	3,730	5,803
Total	24,278	27,318	20,278	27,709	39,460	54,636	48,370	70,854

	District No. 5—Illinois, Indiana, Iowa, Missouri, and Nebraska.				District No. 6—Delaware, Maryland, Michigan, New Jersey, New York, Ohio, Pennsylvania, and West Virginia.			
	1918	1919	1920	1921	1918	1919	1920	1921
January	306	787	515	627	4,124	6,977	5,909	9,696
February	627	505	429	723	4,847	5,539	4,970	8,594
March	477	549	365	757	4,598	5,037	6,065	8,878
April	208	452	167	233	4,097	3,944	2,691	6,419
May	830	1,330	400	395	4,585	2,772	1,875	6,508
June	245	822	390	381	2,065	3,081	3,191	3,697
July	1,440	1,422	1,088	2,067	4,532	6,195	7,654	8,120
August	3,321	5,623	4,658	4,981	11,104	14,614	14,034	19,321
September	3,586	3,870	4,092	2,570	16,153	19,545	31,564	21,785
October	4,553	3,816	4,558	1,833	24,037	24,580	34,813	27,498
November	1,594	931	1,738	613	14,649	12,133	23,524	9,905
December	550	301	367	561	7,527	6,374	9,377	7,074
Total	17,737	20,498	19,348	15,941	102,318	140,791	145,656	187,045

Digitized by Google

TABLE A22.—*Statement showing the relative number of cars loaded with green fruits and vegetables, by districts, years 1918 to 1921, inclusive*—Continued.

	District No. 7—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.				District No. 8—Minnesota, North Dakota, South Dakota, and Wisconsin.				United States, average 4-year per cent of total.
	1918	1919	1920	1921	1918	1919	1920	1921	
January	1,967	2,343	3,176	2,657	2,401	4,904	3,912	4,296	5.48
February	1,889	1,733	1,708	2,368	3,323	3,345	2,741	3,777	4.94
March	2,282	2,734	3,078	2,916	3,978	4,787	3,513	4,876	6.13
April	1,691	2,374	3,589	1,893	2,833	3,642	1,776	3,089	5.41
May	347	1,633	1,218	1,636	1,657	2,197	552	2,302	6.21
June	518	1,361	169	531	640	864	408	639	8.28
July	52	182	68	176	148	254	171	48	10.17
August	224	1,282	277	823	3,414	2,709	1,414	1,163	9.51
September	2,859	3,345	1,689	5,326	9,210	10,227	4,213	9,225	12.96
October	4,057	5,424	3,456	7,322	12,913	15,265	14,123	19,389	16.39
November	2,234	3,975	2,850	4,361	5,619	4,056	7,264	3,848	8.86
December	1,956	3,049	1,626	3,229	2,745	2,222	1,801	1,879	5.44
Total	20,576	29,435	22,904	33,238	48,881	54,472	41,888	55,031	.....

CENTRAL TERMINALS FOR FRUITS AND VEGETABLES.

Railroads, wholesalers, and municipalities should develop common terminals for fruits and vegetables in all important markets. Many cities have outgrown their present facilities. Common terminals will tend to expedite movement, reduce handling costs, and facilitate distribution.

TRAIN SCHEDULES.

The development and maintenance of definite train schedules are exceedingly important to the fruit and vegetable industry. Progress has already been made in this direction, but more consideration should be given to the peculiar needs for scheduled movement of these commodities. Maintained schedules make for stabilized markets, facilitate distribution, tend to reduce congestion at terminals, and enable shippers to plan loading and receivers to arrange in advance for sales and disposition. Where traffic warrants, schedules should be worked up after conference with shippers and should be published and maintained as far as possible.

SUPERVISION OF PERISHABLE TRANSPORTATION.

The transportation of fresh fruits and vegetables and other perishable commodities is a specialized business. With the development of the industry to its present proportions, it is a year round work. Plans must be made well in advance covering such factors as car supply, peak movements, icing facilities and ice supply, and the expedited movement of loaded and empty equipment.

Efficient supervision of the traffic is highly essential for the best interests of producers, shippers, wholesale receivers, consumers, and the carriers.

Every railroad originating or handling perishable products in appreciable volume should create a special department with power to supervise this traffic, including ice supply and icing of cars; loca-

Digitized by Google

tion of icing stations; car supply; placing of cars for loading; prompt movement of loaded cars from point of origin and through the various terminals to destination; prompt return or utilization of cars as soon as unloaded; and by cooperation with shippers and receivers should encourage prompt loading and unloading.

Such departments have already been established by several important lines and by comprehensive supervision and coordination of all factors relating to the transportation of fruits and vegetables have demonstrated their great value. Railroads extensively engaged in the transportation of fruits and vegetables which have not thus far created these departments or have not given sufficient power to existing departments should at once take the necessary steps to adopt the best practices in this regard.

ICING SERVICE.

A systematic investigation and in certain cases a reorganization of the icing stations and icing service will be of material advantage to the railroads and shippers.

REFRIGERATOR-CAR EQUIPMENT FOR FRUITS AND VEGETABLES.

A clear appreciation of the dependence of shippers upon efficient refrigerator equipment is necessary in considering the transportation of fresh fruits and vegetables. No other factor is so important to the industry as the delivery of these products to the market in sound, wholesome, and attractive condition. An adequate supply of efficient refrigerator cars and proper physical handling of these commodities by both shippers and railroads are necessary if waste is to be reduced and food supplies maintained.

An estimate of the number of refrigerator cars in use in 1902 (Railway Age, Oct. 10, 1902) showed 54,522 belonging to private car lines. When to these are added the 18,222 (Interstate Commerce Commission) railway-owned refrigerator cars, we have a total of 72,744 cars in use 20 years ago for all purposes. Adding 62,614 (American Railway Association) railway-owned refrigerator cars (1921) to the 56,124 (American Railway Association) privately owned cars (1921) used for all purposes, we have a total of 118,738 cars as the approximate number of refrigerator cars now existing for all purposes.

While new refrigerator equipment has been built during this period, the quantity has not kept pace with increased needs and demands, and substantial additions should be made.

The total number of refrigerator cars—118,738 (1921)—includes about 21,500 cars used for dressed meats and packing-house products, as well as cars used for other commodities requiring refrigerator-car protection. Of the total number of refrigerator cars in existence not over 90,000 to 95,000 are adapted to fruits and vegetables. Allowing for equipment currently reported in bad order and the equipment regularly engaged and required for other traffic needing special protection, the current supply of refrigerator cars available for fruits and vegetables does not exceed 80,000 to 85,000.

Digitized by Google

STATUS OF REFRIGERATOR-CAR EQUIPMENT.

In 1919 the United States Railroad Administration reported the results of an investigation of the refrigerator-car situation as it applied to railroads and refrigerator-car lines under Federal control at that time. The investigation did not include cars owned by the meat-packing industry.

Of the railroad-owned cars studied, 3,600 were at that time 20 years old or older, and 21,419 were 15 years old or older.

Table A23 is a summary statement showing the thickness of insulation of 85,173 cars covered by the investigation. It will be noted that of the total number of cars studied in 1918 approximately 7 per cent had less than one-half inch insulation, 35 per cent had one-half to 1 inch insulation, 18 per cent had from 1 to 1½ inches insulation, 29 per cent had from 1½ to 2 inches insulation, and 11 per cent had over 2 inches insulation. Two inches high-grade insulation is the minimum thickness of insulation approved by the Department of Agriculture and the Railroad Administration for refrigerator cars engaged in the transportation of highly perishables. It should be stated that new equipment constructed since January 1, 1919, conforms closely with approved specifications as regards thickness of insulation. There has also been a certain amount of rebuilding during the last three years for the purpose of bringing cars to greater efficiency.

TABLE A23.—*Statement showing the minimum thickness of insulation in refrigerator cars and the number of cars having floor racks, as reported to the United States Railroad Administration to December 31, 1918.*

Thickness of insulation:	Cars.
Less than ½ inch	6,203
From ½ inch to and including 1 inch	30,100
From 1 inch to and including 1½ inches	14,698
From 1½ inches to and including 2 inches	24,422
More than 2 inches	9,750
Total	85,173
Number equipped with floor racks:	
Permanent	8,236
Temporary	8,800

Some of the refrigerator cars now owned by the railroads and the private car lines and used for the transportation of highly perishable fruits and vegetables are not fitted for the service. The attention of railroads and private car lines is called to this fact to the end that such cars should be so constructed and rebuilt as to fit them for this type of service, and, further, all refrigerator cars should be so marked as to indicate in what service they may be employed.

SPECIFICATIONS FOR STANDARD REFRIGERATOR CAR ADOPTED BY DEPARTMENT OF AGRICULTURE AND UNITED STATES RAILROAD ADMINISTRATION.

Important features in the design of car adopted are as follows:

(1) Two inches high-grade insulation in walls, ends, and floor and 2½ inches insulation in ceiling.

(2) Basket ice bunkers.

Digitized by Google

(3) Floor racks providing 4-inch air space under lading.
(4) Solid insulated bulkheads.

In determining the character of cars to be built, the efficiency of the standard refrigerator car as established by the United States Department of Agriculture and the United States Railroad Administration should be considered the minimum requirement. The same principle should govern so far as possible in rebuilding. The number of cars required should be fixed on the basis of the peak movement in fruits and vegetables which has been shown to occur during the month of October. (See Table A22.)

PREVENTABLE WASTE.

Information obtained from the inspection of thousands of carloads of fruits and vegetables by the Department of Agriculture, the reports of shipments condemned and destroyed by boards of health of various cities, and the number of claims filed with carriers indicate that losses from deterioration and decay of fruits and vegetables while in transit amount to large sums annually. These losses result from improper methods of handling and packing, from inherent weakness of the commodities, from delays in transportation, from car shortage, from improper and inadequately constructed equipment, and from oversupplied markets. Attention should also be drawn to heavy losses which result from freezing of fruits and vegetables in transit.

Carriers report loss and damage claims amounting to $14,500,000 paid in 1921 on fruits and vegetables alone.

DEFINITE PLAN PROPOSED.

The following plan is recommended as a means of insuring adequate refrigerator-car supply for the transportation of fresh fruits and vegetables:

(1) Extensive and prompt additions to present refrigerator-car equipment by each carrier in accordance with its needs or extension of the equipment and activities of private-line car companies handling fruits and vegetables.
(2) A central control of refrigerator-car supply.
(3) Progressive and prompt retirement of the older and inefficient equipment.
(4) Coordinated investigation by the Department of Agriculture, Interstate Commerce Commission, shippers, and the carriers for the purpose of bringing about—
(*a*) Improved methods of harvesting, packing, handling, storing, and refrigeration in transit.
(*b*) Development of a more efficient protective service against cold.
(5) Cooperation between shippers and carriers—
(*a*) To reduce peak movement by adding to storage facilities when such additions are practicable and by such other methods as may be advisable and practicable.
(*b*) To secure prompt loading and unloading and elimination of unnecessary delays in transportation.
(*c*) Utilization of equipment to safe carrying capacity and thereby securing maximum service.

Digitized by Google

DESCRIPTION OF WHOLESALE FRUIT AND VEGETABLE MARKETS IN LEADING CITIES.

New York City.—New York's food supply reaches the city through more than 100 terminals. Fresh fruit and vegetables are moved largely by rail from the West and South, being transferred from the Jersey shore and cross-river points by means of car floats to the receiving piers.

Cars containing fruits and vegetables are usually delivered on the piers during the evening and night. The contents are unloaded by the railroads and piled on the dock. The public is admitted onto the dock the following morning. This is the wholesale market. Purchasers come to inspect and buy. The car-lot receiver splits up his receipts and sells in smaller quantities to the jobber or agent of the retailer. Each receiver finds his shipment piled and tallied, and proceeds to sell it on the spot, or cart it away to some purchaser or to his store for jobbing.

Chicago.—Its central location, its transportation facilities, its situation on the main route of the tremendous volume of produce moving from the West to eastern consuming markets gives to Chicago's market a place of prime importance in the fruit and vegetable industry. Chicago's own needs are very considerable and its unloads are second only to New York. Thousands of cars billed to Chicago are never unloaded there, but are simply directed to that market as a gateway from which they may be diverted on the through rate to other markets. Chicago is also a great cold storage and storage in transit center.

Pittsburgh.—The Pennsylvania Railroad terminal yard handles practically all the produce brought into Pittsburgh. This yard has a team-track capacity of about 530 cars. There are no unloading depots or platforms.

From 60 to 65 per cent of all sales in the Pittsburgh wholesale market are made to out-of-town buyers from surrounding territory. In other words, about a third of the produce sold in Pittsburgh is used there. The out-of-town buyer comes to the market, purchases his goods upon inspection, and has them reshipped, sometimes in straight carloads, just as they arrive in Pittsburgh; at other times in mixed car lots, as his requirements may demand. The out-of-town business gives this market its greatest importance.

Philadelphia.—There are five important wholesale terminals in Philadelphia at which fresh fruits and vegetables are received. Of these, two are united in an auction market, which handles practically all the receipts of citrus fruits from California and Florida and much of the deciduous fruit from the far West. The most important terminal is that of the Pennsylvania Railroad, where package perishables coming from all points of origin in carloads by rail are unloaded and sold in the depots and to a small extent on the limited team tracks.

Probably a greater portion of Philadelphia's supply of fresh fruits and vegetables comes in by motor truck than at any other leading market. This truck movement originates largely in New Jersey, and during the summer months reaches considerable proportions. The jobbing sections are conveniently located to receive this business.

Digitized by Google

Philadelphia needs a centralization of all the terminal facilities for perishables in one large, central terminal market to which all railroads entering the city should have access on an equal basis. This is a proposition which would have to be worked out by the railroads and municipality, acting in conjunction with the wholesalers.

Boston.—The city of Boston owns and rents out a municipal market building which houses many of the wholesalers and commission merchants dealing in fruits and vegetables. Faneuil Hall gives the wholesale district its name. By a provision of the old Boston city charter a space is maintained in the heart of the wholesale district where any farmer living within a radius of 25 miles of Boston may bring his produce and sell direct to the consumer.

Produce is brought to the Boston market by three railroads, each having separate terminals.

Cartage is a considerable item of expense at Boston. Greater concentration of terminal facilities whereby all carriers might be brought into the same terminal market is an important problem.

The data shown in Table A24 and charts A6 to A31, inclusive, have been prepared from the results of a survey made in the five leading fruit and vegetable markets, viz, Boston, New York, Philadelphia, Pittsburgh, and Chicago. Starting with a specific commodity and specific firm, the complete record of that commodity for the period covered by the survey was taken from the books of that firm. The survey covered (*a*) representative markets, (*b*) representative firms, (*c*) representative commodities, (*d*) the entire business of a firm in the commodity and for the period embraced by the survey which, generally speaking, is the 1920–21 season.

The data thus obtained were then reduced to a series of composite statements covering each commodity.

Digitized by Google

TABLE A24.—*Summary of 9,476 cars of representative fruits and vegetables sold at wholesale in the cities of Boston, Chicago, New York, Philadelphia, Pittsburgh, and other cities during the period September, 1920, and July, 1921.*

	Transportation includes 3 per cent Government transportation tax.										
	Total sales.			Transportation.		Shipper received.		Miscellaneous handling costs.		Receiving distributors' gross profit.	
	Cars.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Barreled apples	2,022	$1,608,522.88	100	$193,091.39	12.00	$1,284,581.83	79.86	$98,196.73	6.11	$32,652.93	2.03
Boxed apples	1,466	2,822,243.03	100	1,022,388.12	36.23	1,542,240.83	54.64	197,229.32	6.99	60,384.76	2.14
Bulk apples	18	8,576.04	100	2,402.87	28.02	5,590.68	65.18	85.10	1.00	497.39	5.80
Asparagus	.....	11,264.00	100	3,127.60	27.77	6,986.35	62.02	248.93	2.21	901.12	8.00
Do	6	9,409.63	100	1,638.79	17.41	6,851.50	72.81	166.57	1.80	752.77	8.00
Northern cabbage	331	78,101.93	100	31,940.11	40.90	35,436.54	45.37	9,347.75	11.97	1,377.53	1.76
Southern cabbage	60	30,282.33	100	20,080.33	66.35	9,226.25	30.46	507.78	1.67	458.97	1.52
California cabbage	20	11,715.34	100	8,294.39	70.80	5,021.09	42.86	450.45	3.84	−2,050.59	−17.50
Texas cabbage	65	41,413.03	100	31,111.78	75.12	5,184.10	12.52	4,024.02	9.72	1,093.13	2.64
California cantaloupe	431	489,152.45	100	203,781.82	41.66	202,960.79	41.50	47,073.81	9.62	35,336.03	7.24
Florida citrus	204	346,556.95	100	92,341.32	26.65	236,287.12	68.18	2,726.60	.79	15,201.91	4.38
California cauliflower	90	82,179.02	100	47,652.83	57.98	27,444.70	33.40	1,586.57	1.93	5,494.92	6.69
Florida and California celery	147	137,601.15	100	69,849.10	50.76	56,924.94	41.37	1,927.25	1.40	8,899.86	6.47
Northern grapes	83	143,944.14	100	17,851.42	12.40	118,047.60	82.01	2,007.41	1.40	6,037.71	4.19
California grapes	140	326,582.80	100	91,810.41	28.11	213,544.56	65.39	4,898.76	1.50	16,329.07	5.00
California lettuce	617	705,144.62	100	332,507.44	47.15	314,290.27	44.57	21,331.32	3.03	37,015.59	5.25
Lettuce	6	4,378.60	100	2,428.35	55.46	1,512.37	34.54	.....	.....	437.88	10.00
Miscellaneous vegetables	58	38,170.51	100	16,762.68	43.92	17,273.12	45.25	1,030.32	2.70	3,104.39	8.13
Miscellaneous fruits	523	1,048,443.00	100	324,136.87	30.92	650,915.12	62.08	.....	.....	73,391.01	7.00
Northern onions	1,007	396,592.86	100	122,270.43	30.83	258,921.85	65.29	8,011.42	2.02	7,389.16	1.84
California onions	10	7,032.05	100	4,012.35	57.06	3,880.11	55.18	243.05	3.45	−1,103.46	−15.69
Texas onions	395	389,188.68	100	182,584.08	46.91	189,184.60	48.61	9,872.69	2.54	7,547.31	1.94
Maine potatoes [1]	295	211,867.29	100	74,470.43	35.15	132,547.58	62.56	5,939.90	2.80	−1,090.62	−.51
Southern potatoes	63	55,013.07	100	15,857.56	28.83	37,922.97	68.93	694.05	1.26	538.49	.98
Do	16	11,934.89	100	4,209.49	35.28	6,926.12	58.03	27.75	.23	771.53	6.46
Northern potatoes	355	229,470.48	100	46,251.04	20.16	178,002.80	77.57	2,273.46	.99	2,943.18	1.30
Prunes	48	66,853.19	100	27,767.66	41.53	35,271.14	52.76	90.44	.14	3,723.95	5.57
Texas spinach	652	648,461.62	100	355,215.16	54.78	293,541.62	45.27	34,232.35	5.27	−34,527.51	−5.32
Strawberries	113	243,111.33	100	32,659.13	13.43	202,272.37	83.20	3,133.07	1.29	5,046.76	2.08
Sweet potatoes	56	62,623.22	100	10,408.22	16.62	48,052.62	76.73	2,381.80	3.81	1,780.58	2.84
Tomatoes	104	208,837.12	100	41,540.47	19.89	121,583.02	58.22	2,480.53	1.19	43,233.10	20.70
Watermelons	75	39,841.47	100	17,886.59	44.89	22,708.80	56.99	25.00	.07	−778.92	−1.95
Total	9,476	10,514,508.72	100	3,448,339.23	32.79	6,271,135.36	59.64	466,977.09	4.43	332,789.93	3.17

[1] Does not include $4,732.89 claims not paid in expense account.

Digitized by Google

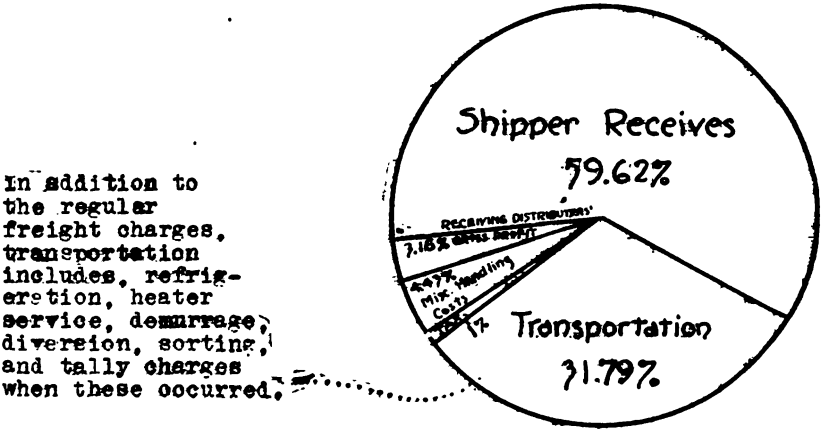
CHART A6.—SUMMARY OF ALL FRUITS AND VEGETABLES COVERED IN SURVEY.

Summary of 9,476 cars fresh fruits and vegetables handled in the cities of Boston, New York, Philadelphia, Pittsburgh, Chicago, Indianapolis, and other points, between September, 1920, and July, 1921. Average haul about 1,400 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodities sold at wholesale:

Shipper received	$0.60
Transportation	.32
Tax on transportation	.01
Miscellaneous handling costs	.04
Receiving distributors' gross profit	.03
Total	1.00

Chart A 6.


In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.
Shipper Receives 59.62%
Receiving Distributors' 7.16% Gross Profit
4.47% Handling Misc. Costs
Transportation 31.79%

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$6,271,135.36	59.62	$661.79
Transportation	3,342,978.25	31.79	352.78
Tax on transportation	105,360.98	1.00	11.12
Miscellaneous handling costs[1]	466,977.09	4.43	49.28
Receiving distributors' gross profit	332,789.93	3.16	35.13
Account not paid	—4,732,89		—.50
Total sales	10,514,508.72	100.00	1,109.60

[1] Miscellaneous handling costs includes storage, carting, unloading, reconditioning when these occur. In the case of cabbage and potatoes in bulk it includes unloading costs, loading into wagons, weighing, and if the commodities are put into bags, barrels, crates, or other containers it may include same and necessary labor.

CHART A7.—BARRELED APPLES.

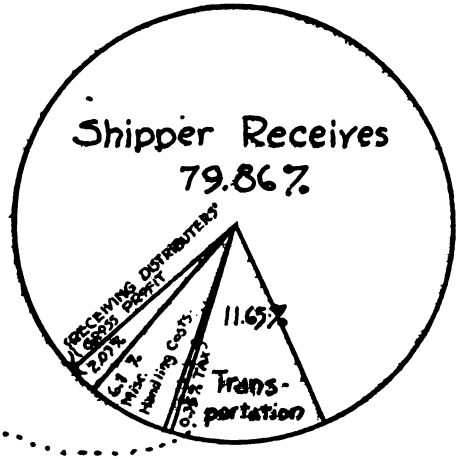
Summary of 2,022 cars barreled apples handled between September, 1920, and June, 1921, from New England, New York, Pennsylvania, Delaware, Maryland, Virginia, Michigan, Illinois, to near-by markets, viz, Boston, Chicago, New York, Philadelphia, and Pittsburgh. The haul varied from 200 to 600 miles, with an approximate average of 400 miles.

The following shows the distribution of the proceeds of the above commodities sold at wholesale:

Shipper received	$0.80
Transportation	.1165
Tax on transportation	.0035
Miscellaneous handling costs	.06
Receiving distributors' gross profit	.02
Total	1.00

Digitized by Google

Chart A 7.



In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$1,284,581.83	79.86	$635.30
Transportation	187,467.38	11.65	92.71
Tax on transportation	5,624.01	.35	2.78
Miscellaneous handling costs [1]	98,196.73	6.10	48.55
Receiving distributors' gross profit	32,652.93	2.03	16.17
Total sales	1,608,522.88	100.00	795.51

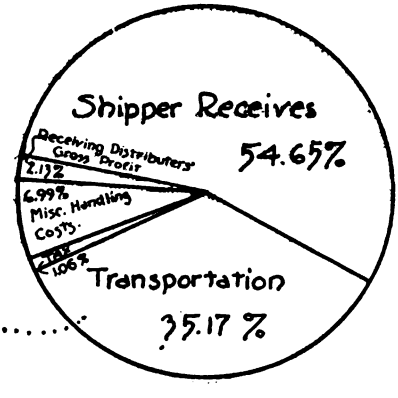
[1] Miscellaneous handling costs in this commodity are mainly storage, al esser amount is for cartage (see p. 32).

CHART A8.—BOX APPLES.

The summary of 1,466 cars of box apples handled between October, 1920, and June, 1921, in the cities of Boston, Chicago, New York, Philadelphia, and Pittsburgh. These originated principally in Washington, Oregon, and Idaho, and the haul varied from 2,050 to 3,300 miles, with an average of approximately 2,800 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Chart A 8.



In addition to the regular freight charges, transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Digitized by Google

Shipper received	$0.55
Transportation	.35
Tax on transportation	.01
Miscellaneous handling costs	.07
Receiving distributors' gross profit	.02
Total	1.00

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$1,542,240.83	54.65	$1,052.00
Transportation	992,609.85	35.17	677.05
Tax on transportation	29,778.27	1.05	20.31
Miscellaneous handling costs [1]	197,229.32	6.99	134.58
Receiving distributors' gross profit [2]	60,384.76	2.13	41.19
Total sales	2,822,243.03	100.00	1,925.13

[1] Miscellaneous handling costs include storage, cartage, unloading, Government inspection, interest on advances made to shippers, insurance, exchange, and other sundry items.
[2] The common carload is 756 boxes.

Chart A 9.

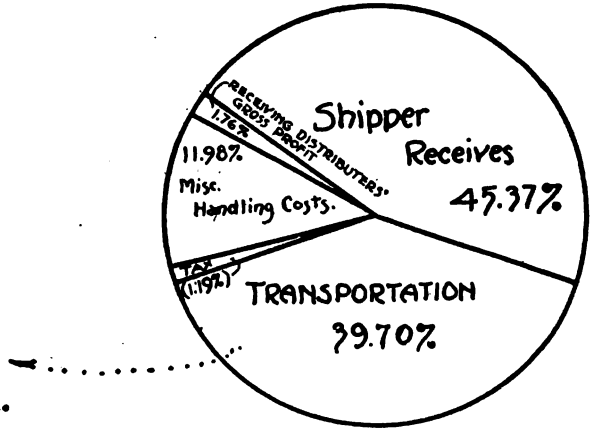

Shipper Receives 45.37%
TRANSPORTATION 39.70%
Misc. Handling Costs. 11.98%
Receiving Distributors' Gross Profit 1.76%
Tax (1.19%)
In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

CHART A9.—NORTHERN CABBAGE.

Summary of 331 cars of New York, Wisconsin, and Michigan cabbage shipped in bulk between September, 1920, and April, 1921, and sold in the cities of Boston, Chicago, Philadelphia, and Pittsburgh. The average haul was about 400 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.45
Transportation	.40
Tax on transportation	.01
Miscellaneous handling costs	.12
Receiving distributors' gross profit	.02
Total	1.00

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$35,436.54	45.37	$109.70
Transportation	31,009.84	39.70	96.00
Tax on transportation	930.27	1.19	2.88
Miscellaneous handling costs [1]	9,347.75	11.98	28.94
Receiving distributors' gross profit	1,377.53	1.76	4.28
Total sales	78,101.93	100.00	241.80

[1] In Chicago, unloading and packing or crating bulk cabbage costs $2 per ton or about $24 per car. The cost of sacks, crates, or containers is also included in this item.

Chart A 10.

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

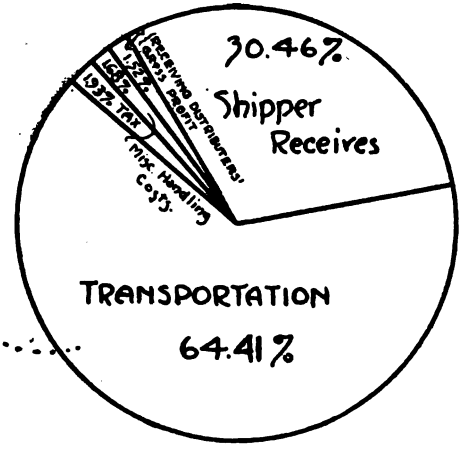


CHART A10.—SOUTHERN CABBAGE.

Summary of 60 cars of Mississippi, Florida, Alabama, Louisiana, and South Carolina cabbage shipped to Boston, New York, and Chicago between January, 1921, and May, 1921. This cabbage was shipped in crates or hampers. The average haul was about 1,000 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.305
Transportation	.645
Tax on transportation	.02
Miscellaneous handling costs	.015
Receiving distributors' gross profit	.015
Total	1.00

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$9,226.25	30.46	$153.77
Transportation	19,504.21	64.41	325.07
Tax on transportation	585.12	1.93	9.75
Miscellaneous handling costs [1]	507.78	1.68	8.46
Receiving distributors' gross profit	458.97	1.52	7.65
Total sales	30,282.33	100.00	504.70

[1] "Miscellaneous handling costs" include: (See Chart A6).

Digitized by Google

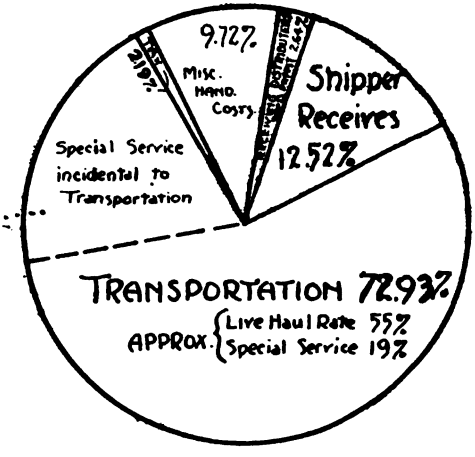
CHART A11.—TEXAS CABBAGE.

Summary of 65 cars of Texas cabbage handled in the cities of Boston, Chicago, Indianapolis, and Pittsburgh between February, 1921, and April, 1921. The average haul was about 1,800 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodities sold at wholesale:

Shipper received	$0.125
Transportation	.7293
Tax on transportation	.0219
Miscellaneous handling costs	.097
Receiving distributors' gross profits	.027
Total	1.00

Chart A 11.



Approximate amount which was paid for special services incidental to transportation such as, refrigeration, heater service, demurrage, diversion, sorting and tally charges.

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$5,184.10	12.52	$79.75
Transportation	30,205.63	72.93	464.72
Tax on transportation	906.15	2.19	13.92
Miscellaneous handling costs [1]	4,024.02	9.72	61.91
Receiving distributors' gross profit	1,093.13	2.64	16.82
Total sales	41,413.03	100.00	637.12

[1] "Miscellaneous handling costs" include: (See Chart A6).

CHART A12.—CALIFORNIA CANTALOUPE.

Summary of 431 cars from the Imperial Valley, Calif., handled in various eastern cities during June and July, 1921. Average haul about 2,800 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.415
Transportation	.405
Tax on transportation	.01
Miscellaneous handling costs	.10
Receiving distributors' gross profit	.07
Total	1.00

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$202,900.79	41.49	$470.91
Transportation	197,848.44	40.45	459.04
Tax on transportation	5,995.39	1.21	13.77
Miscellaneous handling costs[1]	47,073.81	9.61	109.22
Receiving distributors' gross profit	35,336.03	7.24	81.75
Total sales	489,152.45	100.00	1,134.69

[1] "Miscellaneous handling costs" includes inspection of the fruit in the field, packing, shed hire, loading cars, stripping cars, salaries of agents at growing and loading points and traveling expenses of same, interest on advances made to growers, insurance and other expenses connected with warehouse and package storage, also costs incident to selling, not already covered as cartage, Government inspection, etc.

Chart A 12.

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

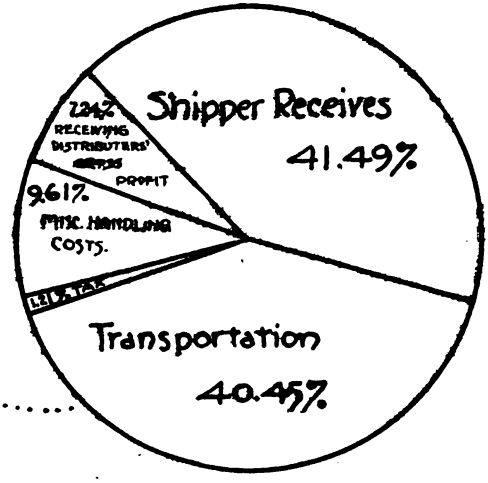
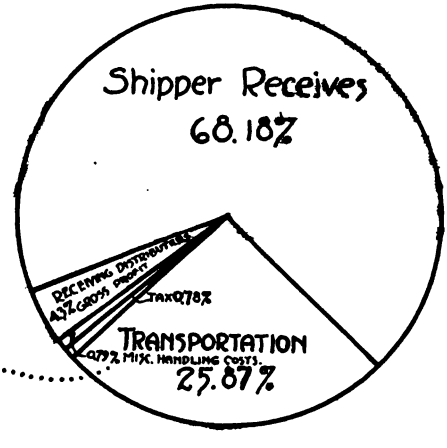


CHART A13.—FLORIDA CITRUS.

Summary of 204 cars of citrus fruit from Florida to Chicago and New York between January and July, 1921. The haul was about 1,200 to 1,300 miles. One hundred and thirty cars were sold at auction; 74 were sold to the retail trade or to the agent of the retailers.

Chart A 13.

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.



Digitized by Google

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.68
Transportation	.26
Tax on transportation	.008
Miscellaneous handling costs	.008
Receiving distributors' gross profit	.044
Total	1.00

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$236,287.12	68.18	$1,158.27
Transportation	99,651.79	25.87	439.52
Tax on transportation	2,689.53	.78	13.14
Miscellaneous handling costs [1]	2,726.60	.79	13.36
Receiving distributors' gross profit	15,201.91	4.38	74.51
Total sales	346,556.95	100.00	1,698.80

[1] "Miscellaneous handling costs" include: (See Chart A6.)

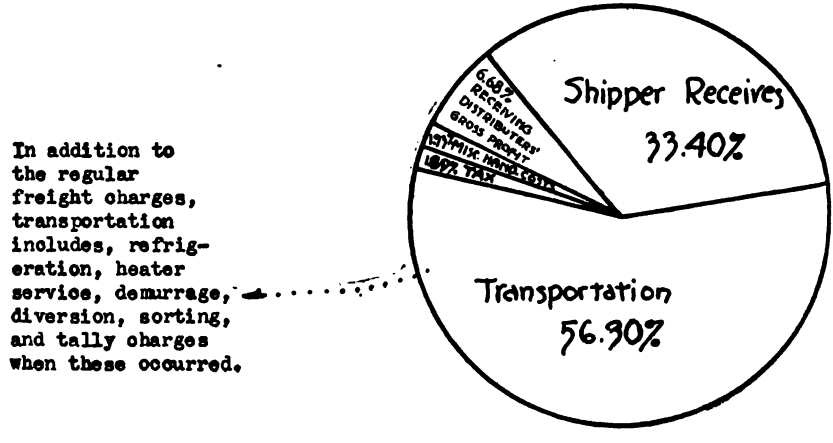
CHART A14.—CALIFORNIA CAULIFLOWER.

Summary of 90 cars of California cauliflower handled between January and April, 1921, in the cities of Boston, Chicago, New York, and Philadelphia. The average haul was about 3,000 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.33
Transportation	.56
Tax on transportation	.02
Miscellaneous handling costs	.02
Receiving distributors' gross profit	.07
Total	1.00

Chart A 14.


Shipper Receives
33.40%
6.68% RECEIVING DISTRIBUTORS' GROSS PROFIT
1.57% MISC. HANDLING COSTS
1.89% TAX
Transportation
56.30%
In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$27,444.70	33.40	$304.94
Transportation	46,264.91	56.30	514.05
Tax on transportation	1,387.92	1.69	15.42
Miscellaneous handling costs[1]	1,586.57	1.93	17.63
Receiving distributors' gross profit	5,494.92	6.68	61.06
Total sales	82,179.02	100.00	913.10

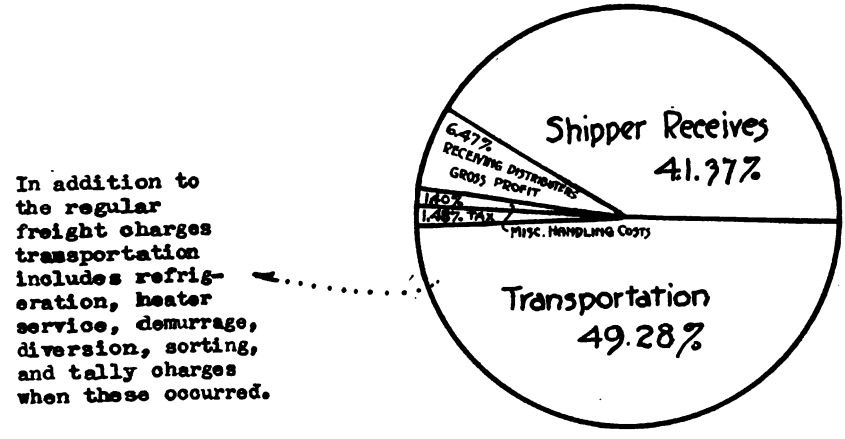
[1] "Miscellaneous handling costs" include: (See Chart A6.)

Chart A15.—Celery.

Summary of 147 cars of California and Florida celery handled between November, 1920, and May, 1921, in the cities of Chicago, New York, Philadelphia, and Pittsburgh. Average haul was about 1,800 miles.

Shipper received	$0.413
Transportation	.493
Tax on transportation	.015
Miscellaneous handling costs	.014
Receiving distributors' gross profit	.065
	1.00

Chart A 15.


In addition to the regular freight charges transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.
Shipper Receives 41.37%
6.47% Receiving Distributors Gross Profit
1.48%
1.42% Tax
Misc. Handling Costs
Transportation 49.28%

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$56,924.94	41.37	$387.24
Transportation	67,814.68	49.28	461.33
Tax on transportation	2,034.42	1.48	13.83
Miscellaneous handling costs[1]	1,927.25	1.40	13.11
Receiving distributors' gross profit	8,899.86	6.47	60.55
Total sales	137,601.15	100.00	936.06

[1] "Miscellaneous handling costs" include: (See Chart A6.)

Digitized by Google

CHART A16.—GRAPES.

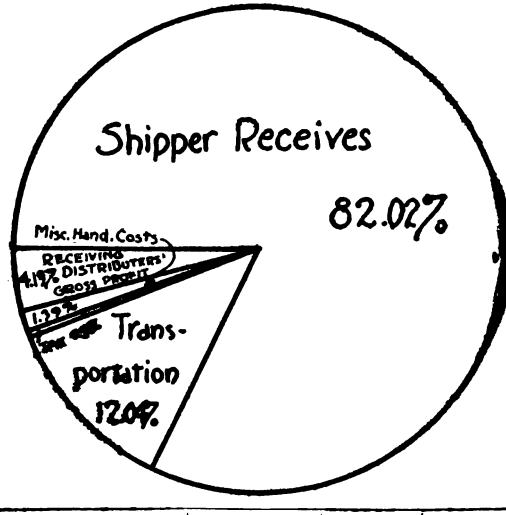
Summary of 83 cars of New York and Michigan grapes handled in Chicago during October to December, 1920. Average haul was 200 miles for Michigan grapes and 600 miles for New York grapes, about 300 miles' average for all.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.82
Transportation	.12
Tax on transportation	.004
Miscellaneous handling costs	.014
Receiving distributors' gross profit	.042
Total	1.00

CHART A 16.

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.



Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$118,047.69	82.02	$1,422.26
Transportation	17,331.48	12.04	208.83
Tax on transportation	519.94	.36	6.24
Miscellaneous handling costs [1]	2,007.41	1.39	24.18
Receiving distributors' gross profit	6,037.71	4.19	72.75
Total sales	143,944.14	100.00	1,734.26

[1] "Miscellaneous handling costs" include: (See Chart A6).

CHART A17.—GRAPES.

Summary of 140 cars of California grapes handled in Chicago during the 1920 season. The average haul was about 2,300 miles.

The following shows the percentage paid for transportation, based on the proceeds of the above commodity sold at wholesale:

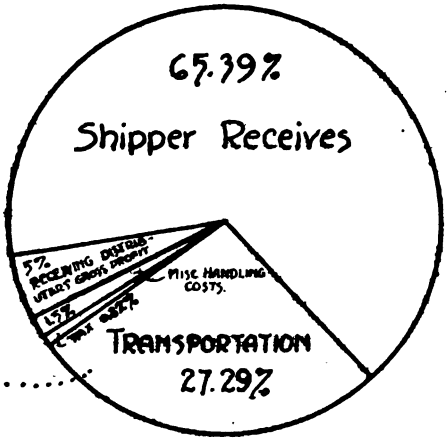
Shipper received	$0.65
Transportation	.272
Tax on transportation	.008
Miscellaneous handling costs	.02
Receiving distributors' gross profit	.05
Total	1.00

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$213,544.56	65.39	$1,525.39
Transportation	89,136.33	27.29	636.61
Tax on transportation	2,674.08	.82	19.13
Miscellaneous handling costs[1]	4,898.76	1.50	34.99
Receiving distributors' gross profit	16,329.07	5.00	116.63
Total sales	326,582.80	100.00	2,332.75

[1] "Miscellaneous handling costs" include: (See Chart A6).

Chart A 17.

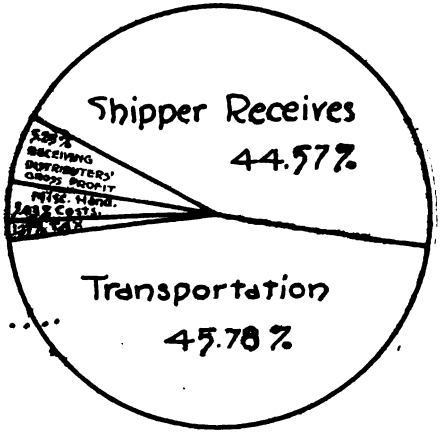


In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

CHART A18.—ICEBURG LETTUCE.

Summary of 617 cars of lettuce, mainly from California, handled between October, 1920, and May, 1921, in Boston, Chicago, New York, Philadelphia, Pittsburgh, and other cities. Average haul about 2,800 miles.

Chart A 18.



In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Digitized by Google

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.45
Transportation	.46
Tax on transportation	.01
Miscellaneous handling costs	.03
Receiving distributors' gross profit	.05
Total	1.00

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$314,290.27	44.57	$509.22
Transportation	322,822.76	45.78	523.21
Tax on transportation	9,684.68	1.37	15.69
Miscellaneous handling costs[1]	21,331.32	3.03	34.77
Receiving distributors' gross profit	37,015.59	5.25	59.97
Total sales	*705,144.62	100.00	1,142.86

[1] "Miscellaneous handling costs" include: (See Chart A6.)

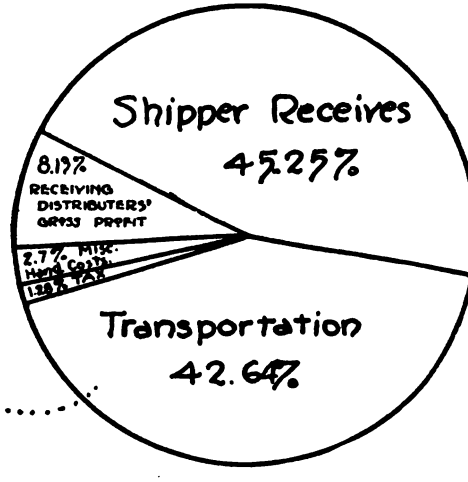
CHART A19.—MIXED VEGETABLES.

Summary of 58 cars beets, cabbage, carrots, potatoes, from New York and other States to Boston and New York, handled between October, 1920, and May, 1921. Haul varied from 400 to 800 miles, with an average of about 600 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodities sold at wholesale:

Shipper received	$0.45
Transportation	.43
Tax on transportation	.01
Miscellaneous handling costs	.03
Receiving distributors' gross profit	.08
Total	1.00

Chart A 19.



In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$17,273.12	45.25	$297.81
Transportation	16,274.45	42.64	280.59
Tax on transportation	488.23	1.28	8.42
Miscellaneous handling costs [1]	1,030.32	2.7	17.76
Receiving distributors' gross profit	3,104.39	8.13	53.53
Total sales	38,170.51	100.00	658.11

[1] "Miscellaneous handling costs" include: (See Chart A6.)

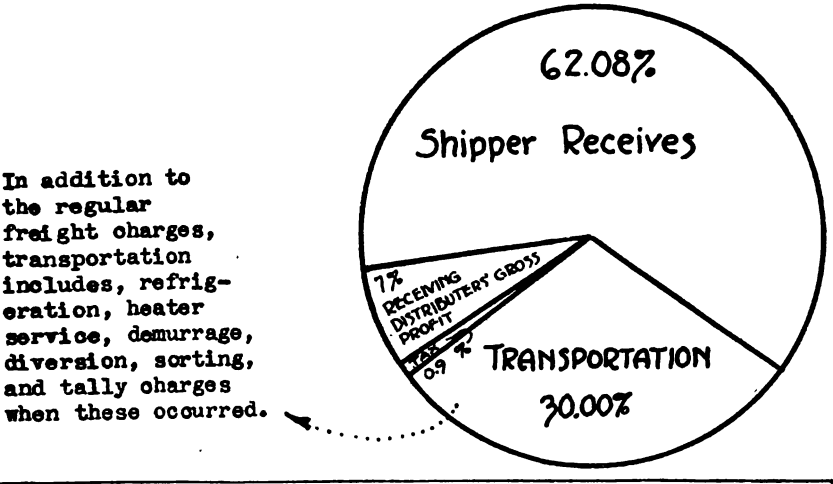
CHART A20.—MISCELLANEOUS FRUITS.

Summary of 523 cars of northwestern fruits and Florida citrus (about 10 per cent of the movement being from Florida) sold at auction in Chicago, January, 1921, to June, 1921. Average haul about 2,000 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodities sold at wholesale:

Shipper received	$0.62
Transportation	.30
Tax on transportation	.01
Receiving distributors' gross profit	.07
Total	1.00

Chart A 20.


62.08%
Shipper Receives
In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.
7%
RECEIVING DISTRIBUTERS' GROSS PROFIT
.9 %
TRANSPORTATION
30.00%

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$650,915.12	62.08	$1,244.59
Transportation	314,695.99	30.00	601.71
Tax on transportation	9,440.88	.9	18.05
Receiving distributors' gross profit [1]	73,391.01	7.00	140.32
Total sales	1,048,443.00	100.00	2,004.67

[1] The auction charge in Chicago is 1½ per cent from the shipper's agent or owner of the goods and a package charge of 3 cents per package from the purchaser; this brings in about 3 per cent revenue to the auction company.

Digitized by Google

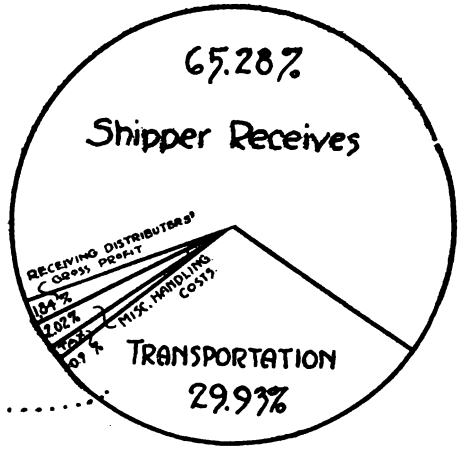
CHART A21.—NORTHERN ONIONS.

Summary of 1,607 cars of New York, Ohio, and Indiana onions handled in the cities of Boston, Chicago, New York, Philadelphia, and Pittsburgh between September, 1920, and June, 1921. The haul varied from 300 to 700 miles, averaging about 600 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.65
Transportation	.30
Tax on transportation	.01
Miscellaneous handling costs	.02
Receiving distributors' gross profit	.02
Total	1.00

Chart A 21.



In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occured.

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$258,921.85	65.28	$257.12
Transportation	118,709.16	29.93	117.88
Tax on transportation	3,561.27	.90	3.54
Miscellaneous handling costs [1]	8,011.42	2.02	7.95
Receiving distributors' gross profit	7,389.14	1.84	7.34
Total sales	396,592.86	100.00	393.83

[1] "Miscellaneous handling costs" include: (See Chart A6.)

CHART A22.—TEXAS ONIONS.

Summary of 395 cars of Texas onions handled in the cities of Boston, Indianapolis, New York, Philadelphia, and Pittsburgh shipped between March 21 and June 30, 1921. The average haul was about 2,000 miles. Out of the 395 cars there were 124 cars moved to New York by rail and boat from Texas points. There is not sufficient volume to justify such a movement to other Atlantic-coast ports. An average carload is 500 to 540 bushel crates.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

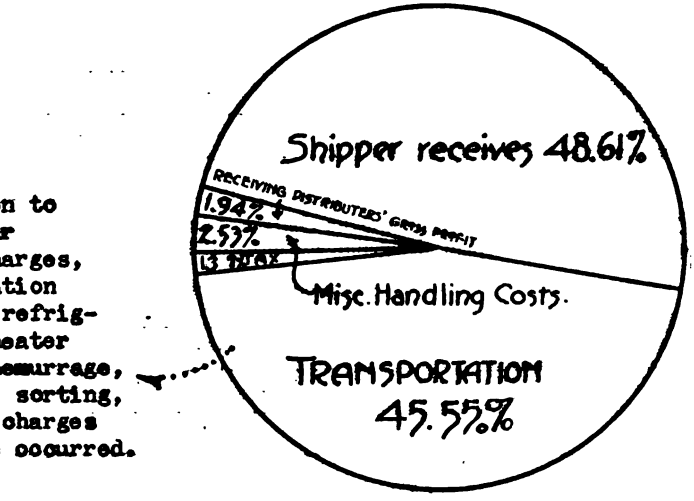
Shipper received	$0.485
Transportation	.46
Tax on transportation	.01
Miscellaneous handling costs	.025
Receiving distributors' gross profit	.02
Total	1.00

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$189,184.60	48.61	$478.94
Transportation	177,266.10	45.55	448.78
Tax on transportation	5,217.98	1.37	13.46
Miscellaneous handling costs [1]	9,872.60	2.53	24.99
Receiving distributors' gross profit	7,547.31	1.94	19.11
Total sales	389,188.66	100.00	985.28

[1] "Miscellaneous handling costs" include: (See Chart A6.)

Chart A 22.



In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

CHART A23, PART 1.—TEXAS ONIONS.[1]

MOVEMENT TO NEW YORK.

The movement of Texas onions by rail to Galveston and then by boat to New York is at present the common mode of transit, 90 per cent of all cars moved in this manner in 1921. The saving in transportation made New York the leading market in the Eastern States. Occasionally a car moved by express to New York, perhaps to make a special market. About 10 per cent of the 1921 movement was by all rail and the balance by rail and water. All cars handled on consignment basis. The three modes of transportation and the results secured are shown below.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Item.	Express.		All rail.		Rail and water.	
	Per car.	Per cent.	Per car.	Per cent.	Per car.	Per cent.
Shipper received	$536.40	34.81	$545.26	45.52	$442.03	50.08
Transportation	807.90	52.44	546.04	45.59	368.09	41.69
Tax on transportation	40.40	2.62	16.38	1.37	11.04	1.25
Miscellaneous handling costs [a]	48.20	3.13	18.25	1.52	8.67	.98
Receiving distributors' gross profit	107.85	7.00	71.88	6.00	52.81	6.00
Total sales	1,540.75	100.00	1,197.81	100.00	882.55	100.00
Number of cars moved	1		34		124	

[1] No chart drawn.
[a] "Miscellaneous handling costs" include: (See Chart A6.)

Digitized by Google

In addition to the regular freight charges, transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

The bulk of the movement, hence the period when prices were lowest, is shown in the third column, the movement by "rail and water." The bulk of the rail movement was in the early part of the season before "boat rates" were established; hence the price received may be expected to be somewhat higher.

The question has repeatedly been raised as to whether a reduction in the cost of transportation would be reflected in the price received by the shipper. It appears from the above that such is the case. On express movement under the highest rate the shipper received 34.81 per cent of the sales price; on "all rail" movement, the next highest rate, the shipper received 45.52 per cent; while on "rail and water" movement, the lowest rate, the shipper received 50.08 per cent.

CHART A23, PART 2.

Texas onions by express.

Shipper received	$0.35
Transportation	.52
Tax on transportation	.03
Miscellaneous handling costs [1]	.03
Receiving distributors' gross profit	.07
Total	1.00

In addition to the regular freight charges, transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Texas onions by rail.

Shipper received	$0.46
Transportation	.46
Tax on transportation	.01
Miscellaneous handling costs [1]	.01
Receiving distributors' gross profit	.06
Total	1.00

Texas onions by rail and boat.

Shipper received	$0.50
Transportation	.42
Tax on transportation	.02
Miscellaneous handling costs [1]	.01
Receiving distributors' gross profit	.06
Total	1.00

CHART A24.—MAINE POTATOES.[2]

Summary of 295 cars of Maine potatoes handled in the cities of Boston, New York, and Pittsburgh between October, 1920, and May, 1921. Average haul was about 550 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.6256
Transportation	.3412
Tax on transportation	.0103
Miscellaneous handling costs	.0503
Receiving distributors' operating loss	.0051
Total	1.0233
Claims unpaid	.0233
	1.00

[1] "Miscellaneous handling costs" include: (See Chart A6.)
[2] No chart drawn.

Digitized by Google

In addition to the regular freight charges, transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$132,547.58	62.56	$449.31
Transportation	72,301.39	34.12	245.09
Tax on transportation	2,169.04	1.03	7.35
Miscellaneous handling costs [1]	10,672.79	5.03	36.18
Receiving distributors' operating loss	−1,090.62	−.51	−13.70
Total sales	211,867.29	100.00	718.19
Claims not paid, in suspense account	4,732.89	2.23	16.04

[1] "Miscellaneous handling costs" include: (See Chart A6.)

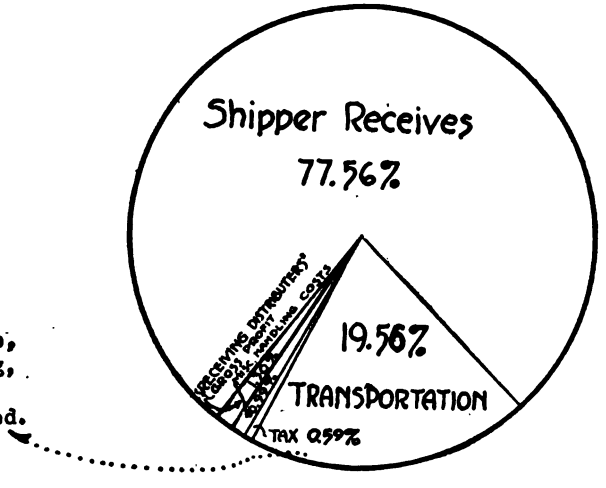
Chart A25.—Northern Potatoes.

Summary of 355 cars of Michigan, Minnesota, New York, New Jersey, Pennsylvania, and Wisconsin potatoes handled in the cities of Chicago, New York, Philadelphia, and Pittsburgh. Average haul, 100 to 400 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.775
Transportation	.195
Tax on transportation	.005
Miscellaneous handling costs	.01
Receiving distributors' gross profit	.015
Total	1.00

Chart A 25.


In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.
Shipper Receives
77.56%
19.56%
TRANSPORTATION
TAX .59%

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$178,002.80	77.56	$501.42
Transportation	44,903.92	19.56	126.49
Tax on transportation	1,347.12	.59	3.80
Miscellaneous handling costs [1]	2,273.46	.99	6.41
Receiving distributors' gross profit	2,943.18	1.30	8.29
Total sales	229,470.48	100.00	646.39

[1] "Miscellaneous handling costs" include: (See Chart A6.)

Digitized by Google

CHART A26.—SOUTHERN POTATOES.

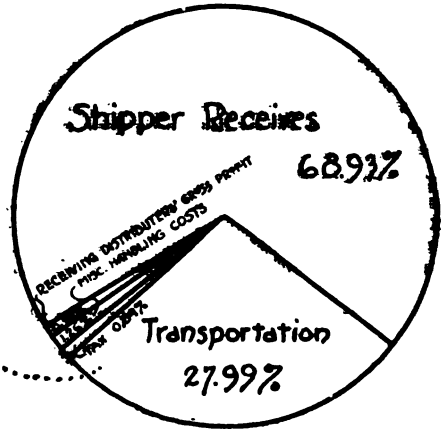
Summary of 63 cars of Florida, California, and Idaho potatoes handled in Chicago during the spring and summer of 1921. Average haul, about 1,300 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.69
Transportation	.281
Tax on transportation	.009
Miscellaneous handling costs	.01
Receiving distributors' gross profit	.01
Total	1.00

Chart A 26.

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.



Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$37,922.97	68.93	$601.95
Transportation	15,395.69	27.99	244.39
Tax on transportation	461.87	.84	7.33
Miscellaneous handling costs [1]	694.05	1.26	11.01
Receiving distributors' gross profit	538.49	.98	8.55
Total sales	55,013.07	100.00	873.23

[1] "Miscellaneous handling costs" include: (See Chart A6.)

CHART A27.—FRESH PRUNES.

Summary of 48 cars of Idaho prunes handled in Chicago during September-October, 1920. Average haul, 1,325 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.528
Transportation	.403
Tax on transportation	.012
Miscellaneous handling costs	.001
Receiving distributors' gross profit	.056
Total	1.00

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$35,271.14	52.76	$734.61
Transportation	26,958.89	40.33	561.62
Tax on transportation	808.77	1.21	16.85
Miscellaneous handling costs[1]	90.44	.13	1.88
Receiving distributors' gross profit	3,723.95	5.57	77.61
Total sales	66,853.19	100.00	1,392.77

[1] "Miscellaneous handling costs" include: (See Chart A6.)

Chart A 27.

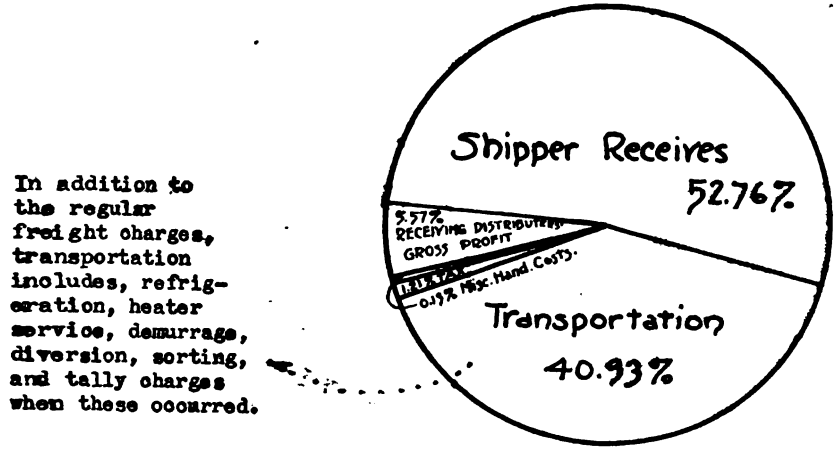

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.
Shipper Receives
52.76%
5.57% RECEIVING DISTRIBUTORS' GROSS PROFIT
1.21% Tax
0.13% Misc. Hand. Costs.
Transportation
40.33%

CHART A28.—TEXAS SPINACH.[1]

Summary of 652 cars (483 express, 169 freight), of Texas spinach handled in the cities of Boston, Chicago, New York, Philadelphia, Pittsburgh, and other cities during January to April, 1921. The average haul is about 1,800 miles.

The statement includes cars moving by express as well as freight. The express rate on the shipments covered in this survey is slightly less than the freight rate.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.45
Transportation	.53
Tax on transportation	.02
Miscellaneous handling costs	.05
Receiving distributors' operating loss	—.05
	1.00

In addition to the regular freight charges, transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$293,541.62	45.27	$450.22
Transportation (express)	250,611.91	38.65	521.47
Transportation (freight)	89,390.92	13.78	.....
Tax on transportation (express)	12,530.60	1.93	23.33
Tax on transportation (freight)	2,681.78	.41	.....
Miscellaneous handling costs[a]	34,232.25	5.28	52.50
Receiving distributors' operating loss	—34,527.51	—5.32	—52.96
Total sales	648,461.62	100.00	994.54

[1] No chart drawn.
[a] "Miscellaneous handling costs" include: (See chart A6).

Digitized by Google

CHART A29.—SOUTHERN STRAWBERRIES.

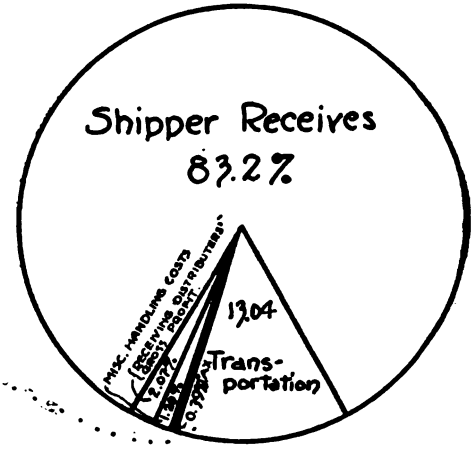
Summary of 113 cars of southern strawberries handled in the cities of Chicago and New York during March to June, 1921. The haul varied from 300 to 870 miles, an average of 640 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Shipper received	$0.83
Transportation	.13
Tax on transportation	.004
Miscellaneous handling costs	.015
Receiving distributors' gross profit	.02
Total	1.00

Chart A 29.

In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.



Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$202,272.37	83.20	$1,790.00
Transportation	31,707.89	13.04	280.59
Tax on transportation	951.24	.39	8.42
Miscellaneous handling costs[1]	3,133.07	1.29	27.81
Receiving distributors' gross profit	5,046.76	2.07	44.60
Total sales	243,111.33	100.00	2,151.42

[1] "Miscellaneous handling costs" include: (See chart A6).

CHART A30.—SWEET POTATOES.

Summary of 56 cars of Delaware, Maryland, Tennessee, and Georgia sweet potatoes, handled in Chicago, September, 1920, to April, 1921. The average haul is about 500 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

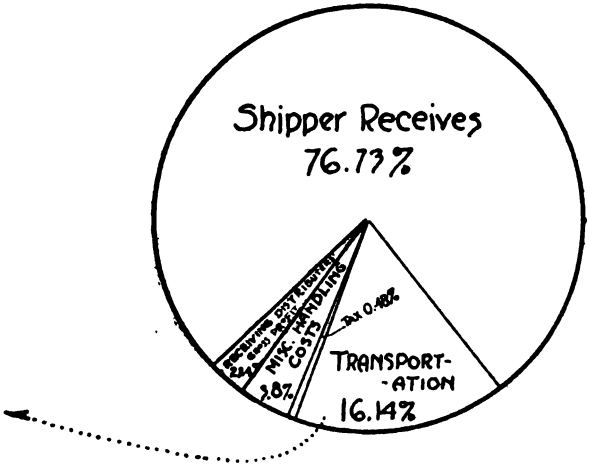
Shipper received	$0.77
Transportation	.16
Tax on transportation	.004
Miscellaneous handling costs	.04
Receiving distributors' gross profit	.03
Total	1.00

Digitized by Google

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$48,052.62	76.73	$858.08
Transportation	10,105.06	16.14	180.45
Tax on transportation	303.16	.48	5.41
Miscellaneous handling costs[1]	2,381.80	3.80	42.53
Receiving distributors' gross profit	1,780.58	2.84	31.80
Total sales	62,623.22	100.00	1,118.27

[1] "Miscellaneous handling costs" include: (See chart A6).

Chart A 30.



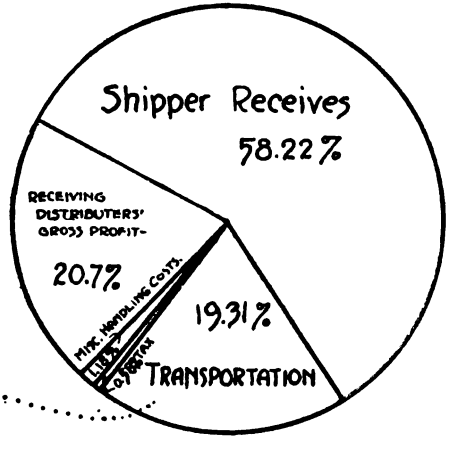
In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

CHART A31.—TOMATO.

Summary of 104 cars of southern tomatoes handled in Chicago during the period January to July, 1921. Average haul about 1,335 miles.

The following shows the percentage paid for transportation based on the proceeds of the above commodity sold at wholesale:

Chart A 31.



In addition to the regular freight charges, transportation includes, refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

Digitized by Google

Shipper received	$0.58
Transportation	.193
Tax on transportation	.006
Miscellaneous handling costs	.01
Receiving distributors' gross profit	.21
	1.00

Item.	Amount.	Per cent of total sales.	Amount per car.
Shipper received	$121,583.02	58.22	$1,169.07
Transportation	40,330.55	19.31	387.79
Tax on transportation	1,209.92	.58	11.63
Miscellaneous handling costs [1]	2,480.53	1.18	23.85
Receiving distributors' gross profit [2]	43,233.10	20.70	415.71
Total sales	208,837.12	100.00	2,008.05

[1] "Miscellaneous handling costs" include: (See chart A6).

[2] About 90 per cent of all tomato arrivals in Chicago for the 9 months, October to July, are repacked. The tomatoes are taken out of their cases, unwrapped and placed in heated rooms which are kept at the right degree of humidity and temperature for ripening. They are examined frequently and the ripe fruits are removed, wrapped in paper, and repacked. The shrinkage under favorable conditions was found to be from 10 to 12 per cent. It is often much higher. The wholesalers' gross profit is largely absorbed in shrinkage and reconditioning costs.

SPECIAL SERVICE INCIDENT TO TRANSPORTATION OF FRUITS AND VEGETABLES.

Fresh fruits and vegetables are shipped generally throughout the country under varying weather conditions, long-distance shipments often moving through several districts where extremes of heat and cold may prevail.

Shipments by freight for short distances often move in box cars, but for long distances are generally made in refrigerator cars, although there are numerous exceptions.

The development of the refrigerator car and quick service are the most important factors contributing to the present distribution and marketing of the more highly perishable products.

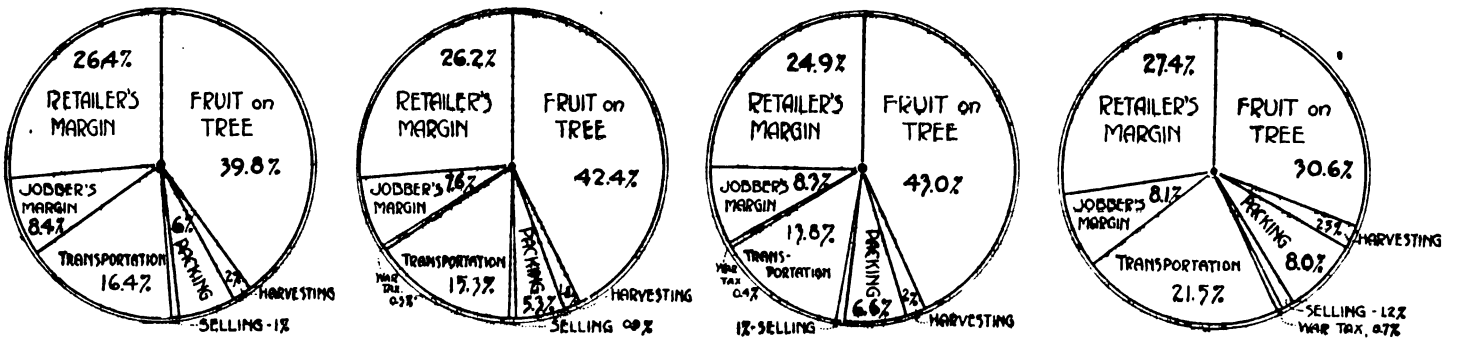
Refrigeration by the use of ice in cars for which a separate charge is made is available at the option of the shipper. In the West it is the practice of the railroads also to provide heater service during periods of cold weather, for which a separate charge is made.

The privilege of diversion in transit permitted by the carriers is also a material factor in the successful distribution and marketing of these products. This diversion in transit permits prompt shipment when the products are harvested, even though not yet sold, and final delivery at points where the highest possible price may be realized, and avoids gluts and shortages at important markets.

Since December 1, 1913, thorough surveys of the factors entering into the selling of oranges have been conducted by the California Fruit Growers' Exchange. Chart A32 shows the results of the surveys and the division of the consumer's dollar among the various factors involved. The study covers Valencias, Navels, and other varieties of oranges.

Digitized by Google

DIVISION OF THE CONSUMER'S DOLLAR PAID FOR ORANGES FROM CALIFORNIA.



Digitized by Google

CHART A32.

[Data from California Fruit Growers' Exchange.]

	Per box.	Per cent.		Per box.	Per cent.
Dec. 1, 1913, to Nov. 15, 1918 (5-year period, averaged):			Dec. 1, 1919, to Nov. 15, 1920:		
Fruit on tree	$2.265	39.8	Fruit on tree	$3.890	43.0
Harvesting	.112	2.0	Harvesting	.184	2.0
Packing	.341	6.0	Packing	.594	6.6
Selling	.061	1.0	Selling	.092	1.0
F. o. b. California	2.779	48.8	F. o. b. California	4.760	52.6
Transportation	.935	16.4	Transportation	1.252	13.8
			Tax on transportation	.038	.4
F. o. b. market	3.714	65.2	F. o. b. market	6.05	66.8
Jobber's margin	.48	8.4	Jobber's margin	.75	8.3
Jobber's price	4.194	73.6	Jobber's price	6.80	75.1
Retailer's margin	1.50	26.4	Retailer's margin	2.25	24.9
Consumer paid	5.69	100.0	Consumer paid	9.05	100.0
Dec. 1, 1918, to Nov. 15, 1919:			Dec. 1, 1920, to Nov. 15, 1921:		
Fruit on tree	3.277	42.4	Fruit on tree	2.301	30.6
Harvesting	.138	1.8	Harvesting	.188	2.5
Packing	.406	5.3	Packing	.601	8.0
Selling	.066	.9	Selling	.090	1.2
F. o. b. California	3.887	50.4	F. o. b. California	3.180	42.3
Transportation	1.187	15.3	Transportation	1.62	21.5
Tax on transportation	.036	.5	Tax on transportation	.05	.7
F. o. b. market	5.11	66.1	F. o. b. market	4.85	64.5
Jobber's margin	.59	7.6	Jobber's margin	.61	8.1
Jobber's price	5.70	73.8	Jobber's price	5.46	72.6
Retailer's margin	2.02	26.2	Retailer's margin	2.06	27.4
Consumer paid	7.72	100.0	Consumer paid	7.52	100.0

NOTE.—In addition to the regular charges, transportation includes refrigeration, heater service, demurrage, diversion, sorting, and tally charges when these occurred.

For the year ended November 15, 1921, orange growers in California received an average of $2.30 per box for the fruit on the tree, or only 3½ cents more per box than the average returns for the five years 1913–1918. In other words, the 1921 returns to grower were back on the 1913–1918 level. Other items entering into the cost of oranges to the consumer have not returned to the 1913–1918 level. The following table, based on 1921 returns, shows the percentage increase in various items of cost:

Item.	Dec. 1, 1920, to Nov. 15, 1921, percentage increase over 1913–1918 average.	Item.	Dec. 1, 1920, to Nov. 15, 1921, percentage increase over 1913–1918 average.
	Per cent.		*Per cent.*
Transportation (exclusive tax)	73.3	Wholesaler's margin	27.1
Harvesting, packing, selling costs paid by exchange	71.2	Price paid by consumer	32.2
Retailer's margin	37.3	Grower received for fruit on tree	1.5

The results of the survey are further analyzed in Table A26.

Digitized by Google

It is noticeable that transportation charges show the greatest relative increase. Other items of cost show an arrested or downward tendency.

TABLE A26.—*Showing the costs of distribution and growers' returns of California oranges for the seasons 1919, 1920, and 1921, compared with five-year average, 1913–1918.*

[Data from California Fruit Growers Exchange.]

Item.	5-year average, 1913–1918.		Dec. 1, 1918, to Nov. 15, 1919.		Dec. 1, 1919, to Nov. 15, 1920.		Dec. 1, 1920, to Nov. 15, 1921.	
	Amount.	Per cent.	Amount.	Per cent to 1913–1918.	Amount.	Per cent to 1913–1918.	Amount.	Per cent to 1913–1918.
Transportation charge (exclusive war tax)	$0.935	100	$1.186	126.8	$1.251	133.80	$1.62	173.3
Harvesting, packing, and selling paid by the exchange	.514	100	.610	118.6	.870	169.2	.880	171.2
Wholesaler's margin	.48	100	.59	122.9	.75	156.2	.61	127.1
Retailer's margin	1.50	100	2.02	134.6	2.25	150.0	2.06	137.3
Consumer paid	5.69	100	7.72	135.7	9.05	158.9	7.52	132.2
Grower received for fruit on tree	2.265	100	3.277	144.7	3.890	171.7	2.300	101.5

INCREASED FIXED CHARGES LOWERS GROWER'S RETURNS.

The increase in transportation and other "fixed charges" has been accompanied by decreased returns to the producer. During the five years 1913–1918 the fruit on the tree returned on an average of 39.8 per cent of the consumer's dollar to the grower. During the year ending November 15, 1921, the fruit on the tree returned the grower only 30.6 per cent of the consumer's dollar paid for oranges.

Prices of oranges are determined by the relation of supply and demand rather than by costs of production and distribution, and changes in these costs are directly reflected in the producer's net return. Comparing 1921 with the period 1913–1918 transportation charges have made the greatest relative inroad into the consumer's dollar spent for oranges. Even allowing for the effect of the recent 10 per cent reduction in freight rate it is apparent from this study that of all factors entering into the cost of oranges to the consumer transportation charges have shown the smallest reduction.

Apples.—The apple crop ranks first in importance in the list of fruit crops in the United States. If a correct analysis of the apple industry is to be made, a sharp line of distinction should be drawn between those apples which reach commercial channels and those which are used or left on the farm. Table A27 shows the total production of apples in the different States, and Table A28 shows the portion of the total crop which is sold and shipped out of the county where grown for the period 1916–1921. From average annual production of approximately 54,000,000 barrels, only about 25,000,000 barrels are commercial. In other words, only about 48 per cent of the average production during the period of 1916–1921 reached commercial channels.

Digitized by Google

TABLE No. A27.—*Estimated annual production of apples in United States.*

[Barrels, 000 omitted.]

State.	1916	1917	1918	1919	1920	1921
Maine	1,680	1,589	670	1,569	580	1,353
New Hampshire	592	345	385	503	408	233
Vermont	1,104	429	330	500	331	200
Massachusetts	1,150	729	810	1,080	1,192	375
Rhode Island	87	66	63	98	130	21
Connecticut	610	438	333	524	722	253
New York	12,600	3,332	13,626	5,600	15,696	4,186
New Jersey	750	689	821	771	981	222
Pennsylvania	6,297	4,060	5,360	2,857	6,195	736
Delaware	83	150	238	250	274	23
Maryland	848	842	678	648	867	75
Virginia	4,433	3,323	3,356	3,317	4,581	2 6
West Virginia	3,344	1,998	1,952	1,159	2,680	140
North Carolina	2,358	2,052	1,196	369	2,107	198
South Carolina	196	267	469	233	137	98
Georgia	541	585	571	212	423	233
Florida						
Ohio	2,867	2,112	2,335	935	4,653	1,139
Indiana	1,397	1,836	598	568	1,532	343
Illinois	1,616	2,506	1,153	1,648	1,955	704
Michigan	4,160	1,340	3,264	2,161	5,500	2,165
Wisconsin	878	812	937	606	750	350
Minnesota	422	396	332	455	450	210
Iowa	1,575	1,815	528	605	1,370	210
Missouri	2,700	2,606	1,415	1,924	1,573	169
South Dakota	116	82	91	101	60	42
Nebraska	567	206	175	375	266	42
Kansas	1,040	1,725	501	612	381	57
Kentucky	2,147	2,380	933	493	1,674	212
Tennessee	1,772	1,667	1,350	520	1,427	251
Alabama	380	484	554	617	395	297
Mississippi	116	105			63	38
Louisiana					11	12
Texas	186	148	94	624	94	91
Oklahoma	275	459	87	594	195	162
Arkansas	1,018	731	430	1,417	1,300	27
Montana	256	304	264	429	275	325
Wyoming					6	6
Colorado	1,015	880	699	1,139	943	1,057
New Mexico	119	290	304	443	145	161
Arizona	46	45	46	51	27	16
Utah	33	302	262	259	353	346
Nevada	16	65			12	8
Idaho	147	1,294	400	1,459	1,140	1,427
Washington	3,225	5,775	5,397	7,730	7,167	7,687
Oregon	1,285	1,241	1,128	1,859	1,396	1,857
California	1,918	1,957	2,187	2,889	2,000	2,167
Total	67,695	54,372	56,542	39,152	74,559	33,294

TABLE A28.—*Production of commercial apples in United States.*

[Barrels, 000 omitted.]

State.	1916	1917	1918	1919	1920	1921
Maine	536	400	226	601	280	630
New Hampshire	198	120	122	187	170	110
Vermont	388	132	105	203	190	116
Massachusetts	368	225	300	335	375	172
Rhode Island	27	19	20	48	75	8
Connecticut	146	96	108	119	215	70
New York	5,544	2,958	5,950	2,975	6,580	3,000
New Jersey	462	408	514	578	848	132
Pennsylvania	1,225	854	1,116	759	1,547	221
Delaware	108	191	186	192	210	14
Maryland	311	263	315	226	309	20
Virginia	2,179	1,667	1,766	1,508	1,968	180
West Virginia	1,140	688	1,092	648	1,340	62
North Carolina	270	280	184	92	250	26
Georgia	114	120	117	57	106	30
Ohio	747	503	902	264	1,445	360
Indiana	298	456	266	197	542	109
Illinois	1,040	1,554	837	750	1,369	397
Michigan	1,414	515	1,495	1,109	3,167	1,208
Wisconsin	105	124	114	126	161	64
Minnesota	42	60	40	61	78	64
Iowa	180	275	101	174	420	25

Digitized by Google

TABLE A28.—*Production of commercial apples in United States*—Continued.

[Barrels, 000 omitted.]

State.	1916	1917	1918	1919	1920	1921
Missouri	675	1,128	735	1,127	924	30
South Dakota	5	4	3	3	5	
Nebraska	142	226	72	215	110	17
Kansas	560	650	333	459	286	29
Kentucky	135	153	108	65	218	31
Tennessee	147	192	218	87	204	45
Alabama	19	24	26	10	20	15
Texas	20	23	11	40	21	21
Oklahoma	27	54	17	43	29	21
Arkansas	245	409	241	1,020	724	16
Montana	70	74	75	124	128	175
Colorado	677	701	527	828	736	812
New Mexico	108	175	117	224	108	123
Arizona	17	16	15	16	10	6
Utah	24	184	163	121	196	198
Idaho	170	873	112	1,058	756	1,227
Washington	4,892	4,620	4,296	6,817	5,734	7,750
Oregon	801	713	671	1,357	832	1,300
California	1,174	1,174	1,127	1,400	1,230	1,280
Total	26,747	22,341	24,743	26,223	33,905	20,098

NOTE.—Boxes converted to barrels in ratio of 3 boxes equal 1 barrel.

TABLE A29.—*Apples, carload shipments by States of origin, 1917–1921.*

State.	1917	1918	1919	1920	1921
Maine	1,264	319	2,300	380	3,529
New Hampshire	268		515	223	224
Massachusetts	345	235	407	511	219
New York	7,486	19,293	12,496	26,539	21,624
New Jersey	1,029	936	743	762	218
Pennsylvania	792	1,659	1,349	2,632	887
Delaware	349	375	495	754	126
Maryland	421	690	602	1,247	264
Virginia	3,821	4,315	6,619	7,891	2,063
West Virginia	1,063	2,989	2,672	4,406	1,277
North Carolina			151	549	52
Georgia	262	133			56
Ohio	267	463	298	605	590
Indiana	230	166		228	157
Illinois	5,529	2,481	2,880	3,408	541
Michigan	1,366	2,869	3,443	5,733	5,126
Iowa	336				6
Missouri	2,370	1,327	1,946	1,645	300
Nebraska	659		164		10
Kansas	1,132	398	534	702	61
Arkansas	1,412	1,175	4,368	2,646	199
Montana	171		498	409	603
Colorado	2,088	2,041	3,203	2,729	3,452
New Mexico	634	404	965		623
Utah	343	452	194	611	722
Idaho	2,988	1,100	3,524	2,857	5,751
Washington	14,477	18,075	22,140	22,183	32,073
Oregon	3,235	2,836	4,167	4,073	5,804
California	1,555	3,058	4,147	4,500	4,766
Potomac Valley	741				
All others	415	1,051	663	807	324
Total	57,048	68,840	81,483	99,030	91,650

NOTE.—Carload shipment figures as reported by carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide, but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

Table A29 shows carload shipments of apples by States of origin as reported by carriers to the Department of Agriculture for the period 1917 to 1921. Table A30 gives yearly unloads at important markets.

Digitized by Google

TABLE A30.— *Yearly unloads of apples at 10 markets, in car lots, 1916 to 1921, inclusive.*

	New York.			Chicago.		
	Boxed.	Barreled.	Total.	Boxed.	Barreled.	Total.
1916	1,382	8,809	10,191	858	4,394	5,252
1917	[1] 1,721	[1] 6,275	[1] 7,996	1,251	3,084	4,335
1918	3,012	8,324	11,336	669	3,867	4,536
1919	3,949	6,652	10,601	1,953	4,116	6,069
1920	3,851	7,207	11,058	1,813	5,289	7,102
1921	5,136	6,848	[2] 11,984	3,278	3,336	6,614
6-year average			[3] 10,528			5,651

	Philadelphia.			Pittsburgh.		
	Boxed.	Barreled.	Total.	Boxed.	Barreled.	Total.
1916	343	2,999	3,342	99	3,346	3,445
1917	239	2,104	2,343	193	2,305	2,498
1918	144	2,557	2,701	546	2,405	2,951
1919	785	2,079	2,864	308	1,908	2,216
1920	961	2,256	3,217	663	2,129	2,792
1921	1,496	1,920	3,416	619	2,189	2,808
6-year average			2,980			2,785

	St. Louis.			Cincinnati.		
	Boxed.	Barreled.	Total.	Boxed.	Barreled.	Total.
1916	156	3,069	3,225	81	1,257	1,338
1917	391	1,726	2,117	127	509	636
1918	362	1,178	1,540	185	945	1,130
1919	264	1,115	1,379	242	1,208	1,450
1920	333	1,279	1,975	423	1,194	1,617
1921	1,284	572	1,856	587	1,223	1,810
6-year average			2,015			1,330

	St. Paul.			Minneapolis.		
	Boxed.	Barreled.	Total.	Boxed.	Barreled.	Total.
1916	240	349	589	172	697	869
1917	134	150	284	258	328	586
1918	220	190	410	176	392	568
1919	153	74	227	155	193	348
1920	213	188	401	229	235	464
1921	310	39	349	353	69	422
6-year average			377			543

	Kansas City.			Washington.			Grand total.
	Boxed.	Barreled.	Total.	Boxed.	Barreled.	Total.	
1916	346	607	953	46	413	459	29,663
1917	387	601	988	94	239	333	[1] 22,116
1918	355	354	709	190	443	633	26,514
1919	381	293	674	188	199	387	26,215
1920	504	502	1,006	155	435	590	30,222
1921	846	156	1,001	205	164	369	30,629
6-year average			888			462	[3] 27,560

[1] Report incomplete.
[2] Additional 152 cars received in less than carloads.
[3] Including incomplete reports of 1917.

Digitized by Google

Chart A 33.

ANNUAL APPLE EXPORTS FROM THE UNITED STATES.

[Data from International Apple Shippers' Association.]

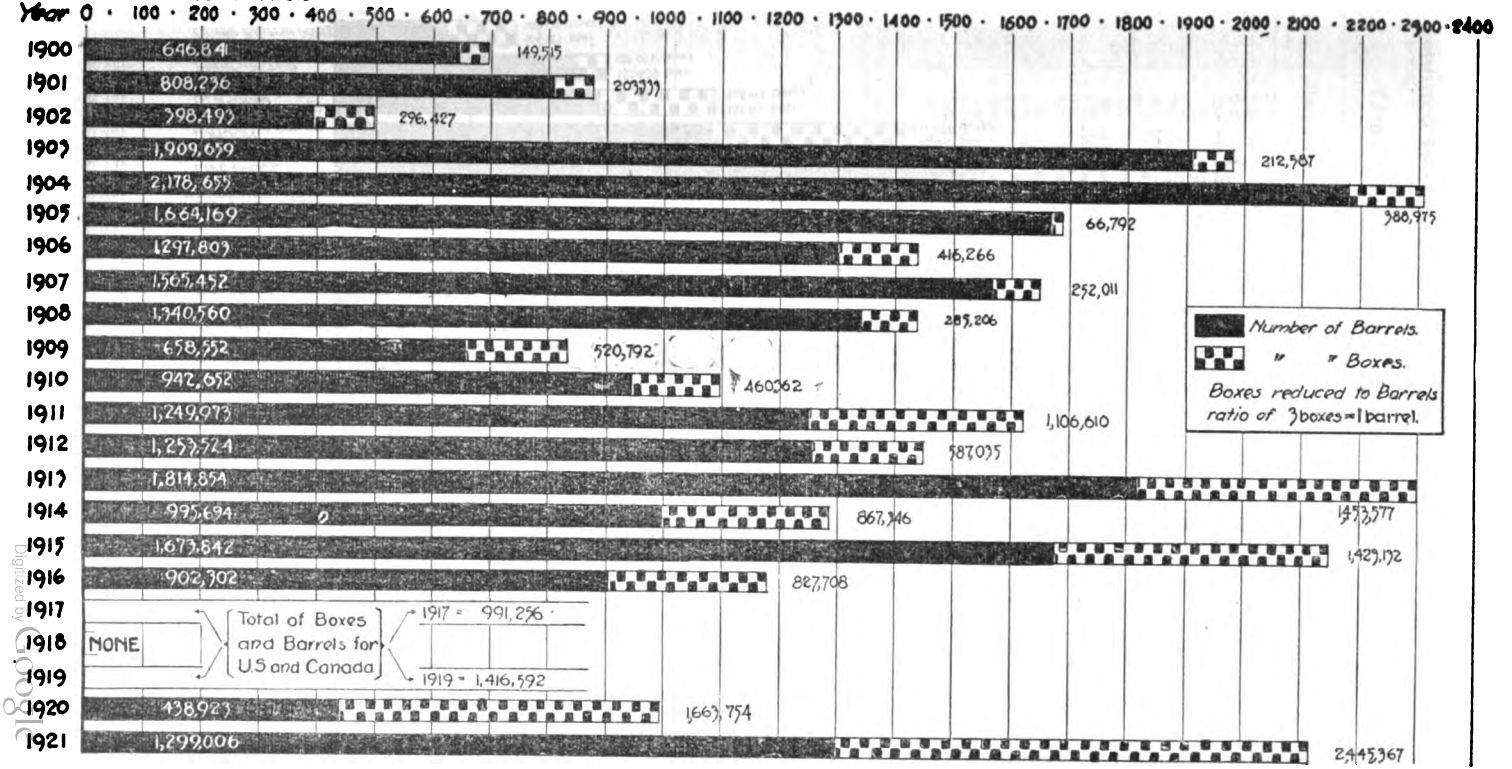
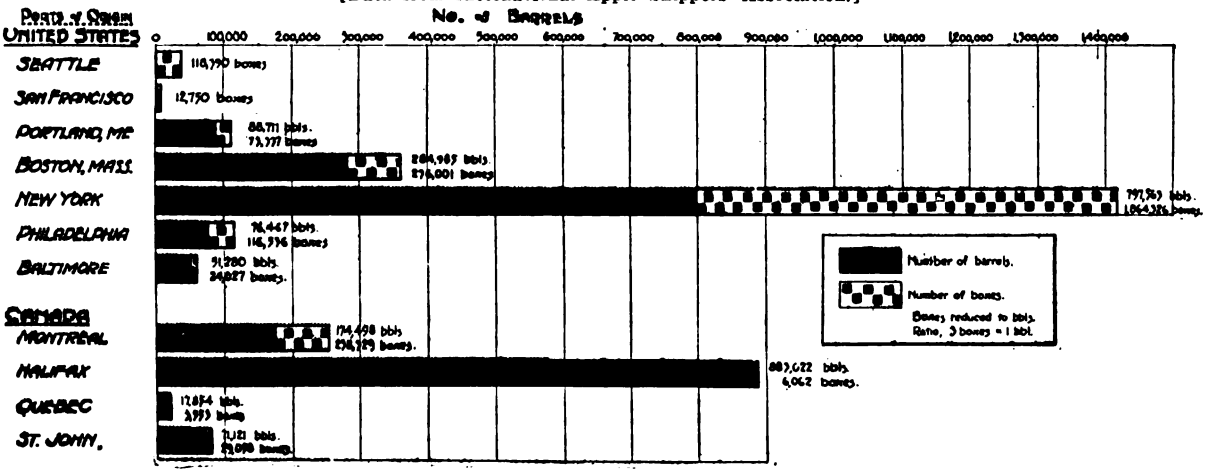


Chart A 34.

APPLES EXPORTED FROM THE UNITED STATES AND CANADA, SEASON 1920–1921.

[Data from International Apple Shippers' Association.]



Digitized by Google

The export outlet is of particular importance to the apple industry. (See Tables A31 and A32 and charts A33 and A34.) Exports are largely confined to the United Kingdom.

TABLE A31.—*Annual apple exports from United States.*

Year.	Barrels.	Boxes.	Total barrels.[1]	Year.	Barrels.	Boxes.	Total barrels.[1]
1880–81	1,159,380	.....	1,159,380	1901–2	398,493	296,427	497,302
1881–82	169,014	.....	169,014	1902–3	1,909,659	212,587	1,980,512
1882–83	312,662	.....	312,662	1903–4	2,178,655	388,975	2,308,313
1883–84	70,329	.....	70,329	1904–5	1,664,169	66,792	1,686,433
1884–85	643,516	.....	643,516	1905–6	1,297,803	416,266	1,436,558
1885–86	778,575	.....	778,575	1906–7	1,565,452	252,011	1,649,456
1886–87	606,608	.....	606,608	1907–8	1,340,560	285,206	1,435,629
1887–88	482,711	.....	482,711	1908–9	658,552	520,792	832,149
1888–89	1,021,411	.....	1,021,411	1909–10	942,652	460,362	1,096,105
1889–90	461,609	.....	461,609	1910–11	1,249,973	1,106,610	1,618,843
1890–91	179,991	.....	179,991	1911–12	1,253,524	587,035	1,449,202
1891–92	1,042,530	.....	1,042,530	1912–13	1,814,354	1,453,577	2,299,380
1892–93	657,570	.....	657,570	1913–14	995,994	867,346	1,284,809
1893–94	83,536	.....	83,536	1914–15	1,673,342	1,423,132	2,148,219
1894–95	900,399	.....	900,399	1915–16	902,302	827,708	1,178,205
1895–96	457,431	13,610	461,968	1916–17	(2)	(2)	(2)
1896–97	1,809,839	.....	1,809,839	1917–18	(2)	(2)	(2)
1897–98	668,475	.....	668,475	1918–19	(2)	(2)	(2)
1898–99	539,500	180,636	599,712	1919–20	438,923	1,663,754	993,508
1899–1900	646,841	149,515	696,679	1920–21	1,299,006	2,445,367	2,114,123
1900–1	808,236	203,333	876,014				

[1] Boxes reduced to barrels in ratio of 3 boxes equal 1 barrel.
[2] None available on account of war.

TABLE A32.—*Apples exported from United States and Canada, season 1920–21.*

Port.	Barrels.	Boxes.	Total barrels.[1]
Seattle	.....	118,390	39,463
San Francisco	.....	12,750	4,250
Portland, Me.	88,711	73,337	113,157
Boston, Mass.	284,985	236,001	363,652
New York	797,563	1,864,326	1,419,005
Philadelphia	76,467	116,536	115,312
Baltimore	51,280	24,027	59,289
CANADA.			
Montreal	174,498	238,329	253,941
Halifax	883,022	6,020	885,029
Quebec	17,854	3,553	19,038
St. John	71,121	29,058	80,807
Total	2,445,501	2,722,327	3,352,943

[1] Boxes equated to barrels in ratio of 3 boxes equal 1 barrel.

Asparagus.—The commercial production of asparagus is confined to somewhat restricted areas. Table A33 indicates that California is credited with producing over two-thirds of the commercial asparagus of the United States during the period 1918–1921.

Digitized by Google

TABLE A33.—*Asparagus—Commercial production by States, 1918–1921, inclusive.*

[Cars, 600 crates.]

State.	1918	1919	1920	1921
California	2,485	2,085	2,707	4,308
Delaware	43	30	48	49
Georgia	121	95	69	128
Illinois	225	323	344	332
Iowa	8	8	9	10
Maryland	49	42	43	42
Massachusetts	101	99	109	124
Michigan	13	13	15	17
New Jersey	363	384	450	409
New York	27	25	29	31
Pennsylvania	89	86	83	81
South Carolina	208	211	232	233
Total	3,732	3,401	4,138	5,768

Cabbage.—The acreage of cabbage is widely distributed. Production is divided into early and late crops. The early production originates largely in the States of California, Florida, Louisiana, and Texas, and the movement occurs during the late winter and spring months. Commercial production figures, carload shipments, and yearly unloads at important markets are found in Tables A34, A35, and A36, respectively.

TABLE A34.—*Cabbage—Commercial production by States, 1916–1921.*

[Cars, 12.5 tons.]

State.	1916	1917	1918	1919	1920	1921
Early:						
California	2,448	2,128	1,720	1,938	5,140	3,992
Florida	2,736	912	3,901	2,120	5,051	2,528
Louisiana	640	256	288	504	1,053	812
Texas	1,160	1,424	425	1,846	6,240	3,567
Late:						
Alabama	664	160	936	454	615	560
Colorado	2,637	3,406	3,038	3,202	5,303	3,739
Illinois	225	147	144	606	1,040	530
Indiana	308	988	918	621	972	523
Iowa	884	576	1,008	266	640	230
Kentucky	266	174	147	239	185	168
Maryland	1,077	231	121	1,326	1,014	789
Michigan	1,363	3,386	3,101	1,126	1,686	710
Minnesota	768	1,900	1,227	1,821	2,078	1,008
Mississippi	416	504	1,186	708	1,183	505
Missouri	76	75	79	444	464	454
New Jersey	1,248	1,115	1,044	2,337	2,930	2,194
New York	7,690	16,527	20,384	11,716	23,638	11,367
Ohio	933	2,324	1,736	1,318	2,285	1,041
Oregon	152	125	154	682	505	589
Pennsylvania	222	196	198	1,728	2,361	1,296
South Carolina	1,656	744	2,240	1,214	1,180	2,658
Tennessee	180	192	218	300	184	320
Virginia:						
Eastern Shore and Norfolk section	3,714	1,620	1,780	1,345	1,318	2,249
Southwest section	966	1,170	1,068	1,324	2,513	1,200
Washington	127	120	150	841	837	589
Wisconsin	4,637	7,741	7,360	7,001	11,958	4,874
Total	37,193	48,141	54,571	47,027	82,373	48,502

Digitized by Google

TABLE A35.—*Cabbage—Carload shipments, by States of origin, calendar years 1917–1921.*

State.	1917	1918	1919	1920	1921
Maine		50			54
New York	5,117	8,468	7,303	6,860	9,001
New Jersey		60		111	31
Pennsylvania	94	160	383	228	231
Maryland	171	63	254	260	325
Virginia	1,891	1,927	1,508	1,519	3,536
North Carolina		69		60	228
South Carolina	663	1,867	1,172	1,086	3,279
Florida	272	3,782	1,537	4,745	1,518
Ohio	546	578	283	275	322
Indiana	250	161			15
Illinois	65	267		143	92
Michigan	524	430	385	307	441
Wisconsin	2,815	3,334	3,508	4,041	3,206
Minnesota	582	1,010	961	788	579
Iowa	453	389	205	371	144
Missouri		50			99
Kentucky	96	121		128	98
Tennessee	51	117		141	176
Alabama	87	860	421	264	940
Mississippi	281	1,128	566	884	820
Louisiana	150	258		233	307
Texas	931	304	1,437	4,828	1,739
Colorado	2,485	1,960	2,323	1,572	2,270
Washington	74			70	163
Oregon		51			29
California	1,412	1,078	1,395	1,243	812
All others	203	119	1,344	264	186
Total	19,213	28,661	24,985	30,421	30,682

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

TABLE A36.—*Cabbage—Yearly unloads at 10 markets in car lots, 1916–1921.*

Crop and year.	New York.	Chicago.	Philadelphia.	Pittsburgh.	St. Louis.	Cincinnati.
1916	2,070	1,366	1,565	1,461	987	452
1917	[1] 2,027	1,141	1,325	896	1,001	425
1918	2,880	1,322	1,936	1,670	858	577
1919	2,301	1,837	1,662	1,172	746	557
1920	2,306	1,355	1,906	1,297	660	596
1921	[2] 3,030	1,769	1,962	1,105	1,049	669
Average	[2] 2,436	1,465	1,726	1,267	918	546

Crop and year.	St. Paul.	Minneapolis.	Kansas City.	Washington.	Total.
1916	75	75	388	235	8,674
1917	46	81	375	186	[1] 7,503
1918	54	57	580	371	10,305
1919	53	49	421	287	9,085
1920	74	121	399	393	9,107
1921	68	74	400	386	10,512
Average	62	76	427	310	[3] 9,232

[1] Reports incomplete.
[2] An additional 53 cars received in less than carloads.
[3] Including incomplete reports of 1917.

Cantaloupes.—California stands preeminent as the leading cantaloupe-producing State in the Union, and is credited with over 40 per cent of the United States production for the period 1919–1921.

Digitized by Google

California shipments originate largely in the Imperial Valley in the extreme southern part of the State. Products and shipments by States are found in Tables A37 and A38, respectively.

TABLE A37.—*Cantaloupes—Commercial production by States, 1918–1921.*

State.	Cars 350 crates.			
	1918	1919	1920	1921
Alabama	144	119	133	128
Arizona	1,227	2,103	1,565	1,605
Arkansas	1,727	4,047	2,247	2,488
California	8,513	15,074	15,181	14,975
Colorado	2,232	3,345	3,549	3,967
Delaware	906	1,377	1,101	1,077
Florida	130	318	413	276
Georgia	1,004	753	513	705
Illinois	356	386	395	505
Indiana	1,395	1,622	1,626	1,268
Iowa	194	260	210	180
Maryland	1,866	2,375	1,844	2,299
Michigan	414	465	392	332
Missouri	312	301	542	506
Nevada	41	37	62	80
New Jersey	1,898	1,929	2,002	2,245
New Mexico	270	608	1,437	680
North Carolina	627	838	819	911
South Carolina	141	233	293	379
Tennessee	337	350	364	584
Texas	159	130	296	96
Virginia	351	352	210	284
Washington	185	261	502	233
Total	24,429	37,283	35,606	35,808

TABLE A38.—*Cantaloupes—Carload shipments by States of origin, 1917–1921.*

State.	Cars.				
	1917	1918	1919	1920	1921
New Jersey	99	50	62	117	241
Delaware	702	429	590	581	943
Maryland	855	490	835	771	1,204
North Carolina	1,106	418	523	359	519
South Carolina	157	31	100	110	299
Georgia	789	551	314	389	529
Florida	.....	26	82	.....	32
Indiana	664	443	462	635	629
Illinois	119	103	85	85	95
Michigan	42	37	118	144	147
Iowa	68	43	26	40	41
Missouri	.....	.....	.....	38	107
Tennessee	46	26	.....	.....	23
Texas	.....	.....	123	.....	157
Arkansas	797	699	1,106	936	1,372
Colorado	1,898	1,818	3,132	2,452	3,139
New Mexico	227	256	378	937	421
Arizona	1,215	1,169	1,832	1,164	1,474
Nevada	139	36	36	48	72
Washington	145	110	100	329	209
California	7,547	6,848	12,010	13,100	13,064
All others	104	36	39	75	64
Total	16,719	13,619	21,963	22,310	24,781

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years since each year they are becoming more and more complete, by the inclusion of factors not previously covered.

Digitized by Google

Cauliflower.—Commercial production of cauliflower is largely confined to five States, as shown in Table A39.

TABLE A39.—*Cauliflower—Commercial production by States, 1918–1921.*

State.	Cars of 400 crates.			
	1918	1919	1920	1921
California	2,628	2,993	4,388	4,286
Colorado	10	12	20	17
Florida	29	78	63	72
New York	1,085	1,082	1,101	1,269
Oregon	65	122	110	213
Total	3,817	4,287	5,682	5,869

Celery.—Celery is one of the highly specialized truck crops, commercial production of which comes from relatively restricted areas. Florida, Michigan, New York, and California are the outstanding States of production. Commercial production of celery by States is shown in Table A40. Carload shipments are shown in Table A41.

TABLE A40.—*Celery—Commercial production, by States, 1918–1921.*

State.	Cars of 180 crates each.			
	1918	1919	1920	1921
California	2,411	5,609	5,255	4,120
Colorado	222	398	462	397
Florida	4,250	3,961	3,160	4,284
Michigan	2,739	2,102	5,074	3,989
New Jersey	911	741	1,576	2,057
New York	2,667	2,387	4,049	2,463
Ohio	675	748	813	841
Pennsylvania	156	180	215	285
Total	14,031	16,146	20,595	18,373

TABLE A41.—*Celery—Carload shipment, by States of origin, 1919–1921.*

State.	Cars.			State.	Cars.		
	1919	1920	1921		1919	1920	1921
New York	1,523	2,643	3,026	Colorado	212	275	161
New Jersey	177	104	211	Oregon	.....	.....	36
Pennsylvania	.....	175	211	California	1,796	2,292	3,326
Florida	2,051	3,010	4,172	All others	92	71	23
Ohio	.....	.....	89				
Michigan	598	581	838	Total	6,449	9,151	12,093

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years since each year they are becoming more and more complete, by the inclusion of factors not previously covered.

Cucumbers.—Commercial production of cucumbers by States is shown in Table A42. Michigan is the outstanding State in point of total production.

Digitized by Google

TABLE A42.—*Cucumbers—Commercial production, by States, 1918–1921.*

[Bushels.]

State.	1918	1919	1920	1921
Alabama	59,677	27,240	8,774	46,640
California	108,360	85,120	176,902	191,100
Colorado	158,286	147,867	151,875	244,792
Illinois	90,683	52,269	14,250	67,520
Indiana	324,995	223,150	105,792	391,494
Iowa	74,796	57,998	18,546	104,240
Michigan	1,615,170	1,435,374	884,068	2,161,836
Minnesota	107,820	95,823	52,920	160,110
Mississippi	23,310	13,143	21,000	219,000
Missouri	87,868	19,800	9,000	31,080
New York	85,440	79,450	114,954	157,863
Ohio	54,175	54,505	49,538	92,480
Texas	74,550	57,600	31,500	42,750
Washington	17,214	13,452	44,000	28,250
Wisconsin	712,734	599,403	222,880	510,575
All others	74,830	42,280	66,872	236,374
Total	3,669,908	3,004,474	1,952,871	4,684,104

Lettuce.—A rapid increase in the movement of lettuce occurred during the period 1919–1921. (See Table A43.) Commercial production of this crop has shown remarkable growth. California, New York, and Florida are the principal producing States, being credited with over 75 per cent of the carload shipments of the country for the period 1919–1921. (See Table A44.)

TABLE A43.—*Lettuce—Carload shipments, by States of origin, 1919–1921.*

State.	1919	1920	1921	State.	1919	1920	1921
New York	1,761	1,920	3,315	Louisiana	36	.....	1
New Jersey	245	513	468	Texas	90	176	114
Pennsylvania	.....	17	41	Colorado	.....	124	238
Virginia	31	.....	135	Arizona	41	164	152
North Carolina	319	265	445	Idaho	.....	24	175
South Carolina	395	356	583	Washington	.....	344	630
Florida	2,134	3,096	2,283	California	2,731	6,329	9,541
Ohio	52	.....	18	All others	75	39	47
Michigan	63	110	94				
Minnesota	45	51	43	Total	8,018	13,754	18,333

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years since each year they are becoming more and more complete, by the inclusion of factors not previously covered.

TABLE A44.—*Lettuce—Commercial production, by States, 1918–1921.*

[Cars of 500 crates.]

State.	1918	1919	1920	1921
Arizona	141	127	268	135
California	3,727	3,822	9,226	8,619
Colorado	71	91	365	486
Florida	1,936	1,833	2,454	2,350
Michigan	203	313	175	228
Minnesota	.....	47	52	53
New Jersey	650	672	716	784
New York	2,355	2,533	3,233	3,912
North Carolina	287	336	311	543
Pennsylvania	28	26	32	42
South Carolina	389	462	394	797
Texas	181	272	565	579
Washington	92	104	259	434
Total	10,062	10,638	18,050	18,960

Digitized by Google

Onions.—Onion production is divided into an early and a late crop, the early crop originating largely in Texas, Louisiana, and California during the late winter months and spring months. The late or fall crop furnishes the bulk of the movement. Production by States is shown in Table A45, carload shipments appear in Table A46, and yearly unloads at leading markets will be found in Table A47.

TABLE A45.—*Onions—Commercial production by States, 1915–1921.*

[Cars, 500 bushels.]

State.	1915	1916	1917	1918	1919	1920	1921
Early crop:							
California	422	576	850	932	540	1,967	960
Louisiana	700	990	1,110	570	311	341	416
Texas	4,238	4,525	6,386	5,204	3,519	6,372	4,348
Late crop:							
California	3,826	3,689	6,777	5,740	4,271	5,460	3,217
Colorado	304	200	452	657	416	519	382
Idaho	140	216	360	34	61	307	165
Illinois	386	383	550	758	364	820	442
Indiana	1,129	1,483	2,490	2,136	1,912	4,564	1,833
Iowa	421	324	693	781	778	1,221	505
Kentucky	431	510	450	511	600	662	350
Maryland					150	180	150
Massachusetts	2,714	2,584	2,855	4,369	2,995	4,821	2,340
Michigan	448	398	912	993	549	1,387	574
Minnesota	770	412	1,126	1,125	791	877	312
Nevada	11	20	7				
New Jersey	1,398	1,595	1,705	1,280	1,188	1,258	1,138
New York	7,205	2,574	5,448	7,058	4,538	7,000	3,889
Ohio	544	2,881	3,403	3,781	3,046	5,339	2,137
Oregon	553	750	537	352	456	656	361
Pennsylvania	202	150	188	114	199	298	116
Texas			349	475	212	375	440
Utah	60	72	80	102	124	115	62
Virginia	468	154	182	202	433	600	459
Washington	624	787	751	800	633	634	428
Wisconsin	572	433	605	687	318	1,097	230
Total	27,566	25,706	38,266	38,659	28,404	46,870	25,304

TABLE A46.—*Onions—Carload shipments, by States of origin, 1917–1921.*

State.	1917	1918	1919	1920	1921
Massachusetts	2,295	2,862	2,917	3,265	2,774
New York	1,557	2,621	2,586	2,684	3,450
New Jersey	561	598	638	630	435
Pennsylvania		77	118	79	146
Maryland				89	143
Virginia	153	99	134	161	148
Florida				27	
Ohio	1,664	1,805	1,890	2,776	2,037
Indiana	881	1,829	1,158	2,138	2,274
Illinois	164	305	195	297	260
Michigan	121	590	308	572	482
Wisconsin	150	302	155	257	253
Minnesota	545	832	489	214	219
Iowa	676	971	502	826	461
Kentucky	185	213	339	298	363
Louisiana	174	450	101	106	79
Texas	5,896	3,575	2,876	5,077	4,177
Colorado	185	198	198	183	397
Idaho				28	43
Washington	308	467	611	766	575
Oregon	207	138	310	85	257
California	3,257	4,008	5,219	4,526	3,573
All others	173	88	128	30	94
Total	19,152	22,028	20,872	25,114	22,640

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years since each year they are becoming more and more complete by the inclusion of factors not previously covered.

Digitized by Google

TABLE A47.—*Onions—Yearly unloads at 10 markets in car lots, 1916–1921.*

Crop and year.	New York.	Chicago.	Philadelphia.	Pittsburgh.	St. Louis.	Cincinnati.
1916	4,951	1,450	1,574	1,441	891	284
1917 [1]	4,668	1,146	1,606	1,178	753	286
1918	4,465	695	1,542	1,208	549	276
1919	4,801	1,403	1,398	976	438	226
1920	4,072	1,237	1,554	1,115	381	283
1921 [2]	4,429	1,538	1,482	922	559	314
Average [3]	4,564	1,245	1,526	1,140	631	278

Crop and year.	St. Paul.	Minneapolis.	Kansas City.	Washington.	Total.
1916	83	146	330	137	11,197
1917	50	149	407	108	[1] 10,349
1918	25	75	389	220	9,444
1919	61	83	284	174	9,844
1920	40	107	426	226	9,441
1921	71	91	344	196	9,946
Average	55	103	363	177	[3] 10,088

[1] Reports incomplete.
[2] An additional 306 cars received in less than carloads lots.
[3] Including incomplete reports of 1917.

Citrus.—Citrus production in this country is largely confined to two States—California and Florida. Production and shipment figures are shown in Tables A48 and A49, respectively. Exports of lemons and oranges are shown in Table A50.

TABLE A48.—*Oranges—Annual production in the United States, in boxes.*

Year.	Florida.	California.	Total.	Year.	Florida.	California.	Total.
1915	6,150,000	15,050,000	21,200,000	1919	7,000,000	15,528,000	22,528,000
1916	6,933,000	17,500,000	24,433,000	1920	8,100,000	21,600,000	29,700,000
1917	3,500,000	7,093,000	10,593,000	1921	8,200,000	22,500,000	30,700,000
1918	5,700,000	18,500,000	24,200,000				

TABLE A49.—*Oranges—Yearly car-lot shipments, by States of origin, 1919 and 1920.*

States.	1919	1920	States.	1919	1920
Florida	13,264	19,318	Arizona	98	41
Alabama	5	76	California	35,957	30,445

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

Digitized by Google

TABLE A50.—*Exports of lemons and oranges, in boxes, from the United States, by countries of destination, years ending June 30, 1916 and 1917, and calendar years 1918 to 1921.*[1]

Exported to—	Year ending June 30—		Calendar year—			
	1916	1917	1918	1919	1920	1921
Lemons:						
Canada	135,183	143,709	176,982	270,758	254,695	(2)
Panama	2,475	2,255	398	999	2,333	(2)
Mexico	1,073	1,814	1,235	1,062	1,681	(2)
China	4,967	6,216	4,526	11,950	10,817	(2)
Russia in Asia	7,434	656	.....	31	40	(2)
Australia	9,799	5,800	.....	3,380	1,630	(2)
New Zealand	6,370	8,482	4,450	10,466	12,306	(2)
Philippine Islands	3,517	2,993	2,607	4,240	4,956	(2)
Other countries	4,252	3,013	3,149	4,030	4,592	(2)
Total	175,070	174,938	193,347	306,916	293,050	304,313
Oranges:						
England	12,682	14,787	2,493	45,267	5,732	(2)
Scotland	10,664	6,329	.....	6,175	3,975	(2)
Bermuda	1,925	3,082	1,201	1,205	2,821	(2)
Canada	1,489,746	1,726,394	827,529	1,633,421	1,417,001	(2)
Panama	4,411	4,026	174	5,356	6,077	(2)
Mexico	6,207	27,408	2,988	5,562	6,583	(2)
Newfoundland and Labrador	4,285	7,673	7,378	12,483	9,324	(2)
China	1,300	2,031	1,277	6,280	9,870	(2)
Australia	9,301	16,416	.....	2,500	860	(2)
New Zealand	27,021	27,991	4,564	27,381	22,496	(2)
Philippine Islands	5,302	7,432	6,059	14,635	18,496	(2)
Cuba	479	2,174	456	5,466	9,475	(2)
Other countries	1,719	4,629	3,040	11,737	5,284	(2)
Total	1,575,042	1,850,372	857,159	1,777,468	1,517,994	2,221,075

[1] Compiled from foreign commerce and navigation of the United States.
[2] Details not available.

Peaches.—There has been a shifting and to some extent a relocation of the centers of peach production in the United States during the period 1913–1921. (See Table A51.) Figuring in this development has been the very rapidly increasing production in California and Georgia. California is credited with over one-half of the commercial crop of peaches in the United States during the period 1917–1920. (See Table A52.) It should be noted, however, that from 70 to 90 per cent of the California peach crop is either canned or dried.

TABLE A51.—*Peaches—Agricultural production in the United States, 1913–1921.*

[Bushels; 000 omitted.

State.	1913	1914	1915	1916	1917	1918	1919	1920	1921
New Hampshire	44	3	58	24	46	.....	39	.....	29
Massachusetts	105	31	152	66	144	.....	136	4	185
Connecticut	263	142	335	134	390	.....	188	10	290
New York	1,742	530	2,106	1,238	4,823	700	1,648	2,600	1,700
New Jersey	483	1,140	1,275	689	990	832	1,018	2,134	347
Rhode Island	29	14	29	14	.....	.....	.....	4	12
Pennsylvania	922	1,541	2,044	1,069	1,848	720	1,200	2,000	350
Delaware	312	608	842	346	324	136	277	203	7
Maryland	480	1,032	1,248	600	1,038	235	731	692	59
Virginia	312	911	1,358	660	928	510	928	1,092	52
West Virginia	132	886	1,164	520	900	680	760	992	48
North Carolina	598	1,863	1,955	897	1,978	1,150	713	1,539	647
South Carolina	405	1,166	864	545	1,030	998	520	832	566
Georgia	1,950	5,785	5,330	3,510	3,668	6,092	5,895	3,799	6,550
Ohio	981	1,653	2,448	1,350	341	174	428	3,438	335

Digitized by Google

TABLE A51.—*Peaches—Agricultural production in the United States, 1913–1921*—Con.

[Bushels; 000 omitted.]

State.	1913	1914	1915	1916	1917	1918	1919	1920	1921
Indiana	1,276	1,128	648	888	518	.....	150	405	28
Florida	112	188	117	119	.....	.....	.....	150	138
Illinois	1,998	1,755	874	780	461	.....	790	770	76
Michigan	1,539	1,247	2,360	2,010	744	85	480	1,500	358
Iowa	632	472	112	64	.....	.....	3	100	85
Missouri	4,320	3,780	3,300	1,080	728	.....	828	1,427	.....
Nebraska	210	192	120	30	.....	.....	.....	5	.....
Kansas	875	1,760	2,442	150	.....	.....	80	187	24
Kentucky	1,430	1,980	1,320	880	1,100	110	726	988	80
Tennessee	1,140	2,640	2,460	1,080	595	833	1,280	1,500	320
Alabama	1,140	2,310	2,640	1,110	1,281	2,440	1,678	974	1,230
Louisiana	460	356	456	567	.....	.....	.....	289	264
Mississippi	1,020	1,440	1,540	975	.....	.....	800	412	322
Texas	2,107	1,196	4,081	2,860	1,728	2,333	2,760	800	2,200
Oklahoma	860	220	2,408	230	798	167	1,007	180	360
Arkansas	3,120	3,180	5,940	2,340	1,824	217	1,280	117	435
Arizona	57	60	60	60	.....	.....	.....	48	54
Colorado	360	1,025	650	405	1,096	959	840	670	880
New Mexico	52	106	154	40	124	34	122	6	8
Utah	284	380	212	84	1,365	1,050	1,500	471	763
Idaho	92	120	162	25	211	51	350	42	150
Nevada	8	9	7	1	.....	.....	.....	6	4
Washington	446	486	566	415	1,747	575	2,309	155	772
Oregon	311	387	432	276	273	93	514	100	190
California	7,150	10,387	9,768	8,808	15,724	11,920	17,600	15,200	12,848
Total United States	36,936	64,097	54,109	39,707	48,765	33,094	49,578	45,620	32,733

TABLE A52.—*Peaches—Commercial production in the United States.*

[Bushels; 000 omitted.]

State.	1917	1918	1919	1920
New Hampshire	14	.....	11	1
Massachusetts	36	.....	49	2
Connecticut	273	.....	53	17
New York	3,617	525	780	1,730
New Jersey	711	640	683	334
Pennsylvania	665	258	467	610
Delaware	166	101	175	159
Maryland	639	144	287	558
Virginia	119	90	201	191
West Virginia	675	459	529	666
North Carolina	150	90	92	153
South Carolina	113	102	35	108
Georgia	1,512	3,255	2,964	2,127
Ohio	188	87	173	919
Indiana	31	.....	14	77
Illinois	171	.....	261	258
Michigan	336	54	120	638
Missouri	218	.....	139	153
Kentucky	44	4	15	62
Tennessee	65	100	119	155
Alabama	69	138	109	75
Texas	456	767	880	158
Oklahoma	287	77	345	22
Arkansas	849	87	1,360	34
Colorado	822	719	676	439
New Mexico	99	27	75	5
Utah	956	735	830	578
Idaho	158	42	163	33
Washington	1,223	402	1,417	497
Oregon	114	31	171	46
California	14,151	11,663	16,268	13,486
Total	28,927	20,597	29,461	24,780

NOTE.—70 to 90 per cent of the California peach crop is either canned or dried.

Georgia is the leading fresh-peach-shipping State in the Union, production coming largely from the Fort Valley section, which

Digitized by Google

ships the earliest peaches to reach the market in quantity. The distribution of the 1921 Georgia peach crop is shown in chart A35. Carload shipments of peaches by States are shown in Table A53, and yearly unloads at leading markets appear in Table A54.

TABLE A53.—*Peaches—Carload shipments by States of origin, 1917–1921.*

State.	1917	1918	1919	1920	1921
Connecticut	178	.....	.....	.....	66
New York	7,308	1,057	1,434	4,705	2,826
New Jersey	1,218	748	1,148	1,307	5
Pennsylvania	879	257	366	315	43
Delaware	235	153	173	171	.....
Maryland	981	222	617	425	1
Virginia	125	63	137	370	.....
West Virginia	990	322	425	509	.....
North Carolina	65	56	66	343	510
South Carolina	.....	88	.....	60	31
Georgia	4,098	7,995	7,236	5,663	10,562
Ohio	86	105	56	1,035	51
Illinois	.....	23	295	540	1
Michigan	445	76	270	2,248	185
Missouri	163	.....	210	.....	1
Tennessee	.....	152	116	149	218
Alabama	.....	171	199	126	47
Texas	825	1,579	1,940	62	964
Oklahoma	278	244	866	.....	31
Arkansas	1,597	190	2,335	.....	528
Colorado	1,347	1,111	1,334	773	1,133
New Mexico	120	.....	58	.....	.....
Utah	1,146	577	1,102	373	831
Idaho	197	21	265	.....	103
Washington	1,920	647	2,219	204	1,112
Oregon	65	.....	105	.....	56
California	2,858	4,518	7,846	7,298	7,027
All others	113	34	105	205	13
Total	27,237	20,409	30,923	26,881	26,345

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide, but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

TABLE A54.—*Peaches— Yearly unloads at 10 markets in car lots, 1916–1921.*

Crop and year.	New York.	Chicago.	Philadelphia.	Pittsburgh.	St. Louis.	Cincinnati.
1916	3,395	929	1,084	1,459	347	499
1917	3,620	1,067	827	1,167	348	495
1918	3,683	1,060	892	1,010	188	415
1919	3,935	1,357	944	1,221	334	631
1920	3,506	1,267	847	849	347	481
1921	[1] 4,143	1,326	1,056	759	481	600
Average	3,714	1,168	942	1,078	341	520

Crop and year.	St. Paul.	Minneapolis.	Kansas City.	Washington.	Total.
1916	84	210	139	123	8,269
1917	69	190	292	120	8,195
1918	97	83	205	138	7,771
1919	128	112	285	158	9,105
1920	36	64	158	263	7,818
1921	77	101	268	148	8,969
Average	82	127	224	158	8,353

[1] An additional 74 cars received in less than carloads.

Digitized by Google

Pears.—While pear acreage is somewhat widely distributed throughout the country (see Table A55), the commercial production

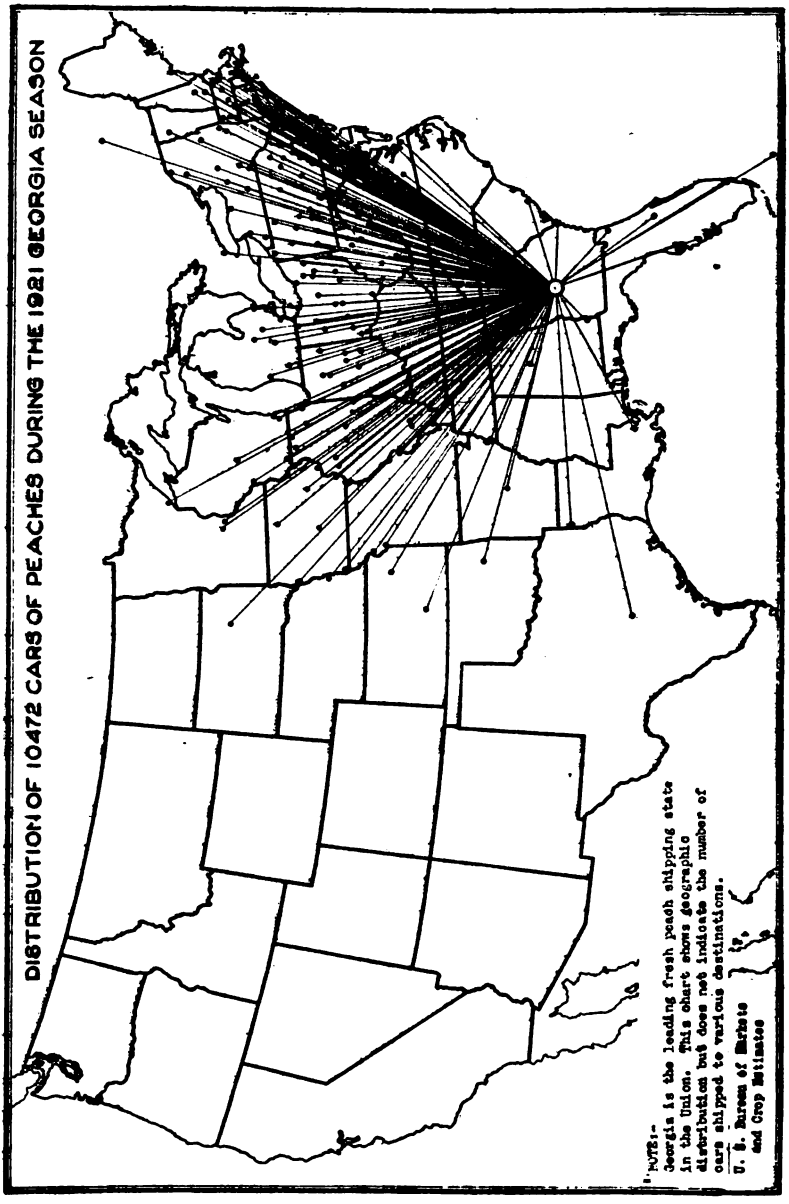

DISTRIBUTION OF 10472 CARS OF PEACHES DURING THE 1921 GEORGIA SEASON
NOTE:-
Georgia is the leading fresh peach shipping state in the Union. This chart shows geographic distribution but does not indicate the number of cars shipped to various destinations.
U. S. Bureau of Markets and Crop Estimates

Chart A 35.

originates in relatively restricted areas. A list of pear-shipping States appears in Table A56.

Digitized by Google

TABLE A55.—*Pears—Agricultural production in the United States, 1913–1921.*

[Bushels; 000 omitted.]

State.	1913	1914	1915	1916	1917	1918	1919	1920	1921
Maine	32	40	30	36	24	20	44	10	15
New Hampshire	24	22	18	25	19	15	25	18	17
Vermont	20	17	17	24	14	13	18	10	6
Massachusetts	121	98	75	114	71	77	115	83	45
Rhode Island	16	13	10	14	7	10	12	11	8
Connecticut	55	43	36	46	29	34	47	61	50
New York	2,016	1,298	1,375	1,675	1,708	1,352	1,530	2,700	1,525
New Jersey	598	876	596	687	590	650	500	690	185
Pennsylvania	456	608	494	509	448	518	355	845	220
Delaware	77	210	228	164	294	238	200	140	9
Maryland	224	560	483	378	525	455	420	421	35
Virginia	68	234	261	122	194	119	190	438	30
West Virginia	11	72	63	42	33	33	40	66	2
North Carolina	58	187	150	75	150	108	84	208	100
South Carolina	42	109	91	56	100	98	81	120	115
Georgia	118	208	203	135	140	188	152	173	171
Florida	58	112	104	54	46	132	70	24	40
Ohio	400	544	560	376	334	304	218	478	126
Indiana	474	422	410	351	410	260	188	375	70
Illinois	422	422	496	354	456	302	381	603	100
Michigan	707	840	550	1,007	1,080	704	426	1,044	532
Wisconsin	22	22	23	26	.....	.....	.....	24	16
Iowa	102	84	106	63	82	32	58	90	5
Missouri	184	283	294	164	265	112	280	418	4
Nebraska	13	14	18	10	14	6	16	22	2
Kansas	63	109	133	106	140	38	120	41	7
Kentucky	160	308	264	160	204	140	128	132	4
Tennessee	79	152	195	59	75	112	72	200	65
Alabama	90	132	168	90	80	152	114	158	189
Mississippi	106	142	160	50	30	136	75	167	167
Louisiana	48	52	55	48	52	52	50	47	38
Texas	187	266	301	322	280	246	385	338	406
Oklahoma	23	28	68	11	45	38	70	42	36
Arkansas	55	98	135	68	102	64	93	42	39
Montana	10	12	12	6	11	6	15	6	7
Colorado	130	206	99	99	320	194	290	386	483
New Mexico	46	60	64	36	46	56	67	32	24
Arizona	17	20	22	18	21	19	22	12	16
Utah	42	56	31	12	48	51	47	87	81
Nevada	6	7	4	2	6	6	5	5	3
Idaho	71	66	75	50	70	60	70	58	55
Washington	464	536	564	551	595	1,300	3,360	1,140	1,710
Oregon	559	540	525	555	600	672	553	760	836
California	1,634	1,958	1,650	3,124	3,523	4,240	4,520	4,080	3,120
Total, United States	10,108	12,086	11,216	11,874	13,281	13,362	15,472	16,805	10,705

TABLE A56.—*Pears—Carload shipments by States of origin, 1919–1921.*

State.	1919	1920	1921	State.	1919	1920	1921
New York	1,505	3,334	2,866	Arkansas	.....	.....	11
New Jersey	121	27	26	Colorado	524	604	702
Delaware	55	269	.....	New Mexico	.....	35	27
Virginia	.....	33	4	Utah	.....	75	31
Georgia	51	.....	22	Idaho	.....	.....	13
Ohio	.....	50	12	Washington	2,454	1,887	2,815
Indiana	.....	75	.....	Oregon	930	855	944
Illinois	324	1,132	.....	California	3,664	4,348	3,950
Michigan	127	1,139	504	All other	230	148	8
Missouri	73	.....	1				
Alabama	.....	.....	40	Total	10,158	14,099	12,039
Texas	100	88	63				

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years since each year they are becoming more and more complete by the inclusion of factors not previously covered.

Digitized by Google

Potatoes.—From the standpoint of size and total value the white-potato crop ranks first in the list of vegetables. Shipments in 1921 exceeded 200,000 cars. (See Table A57.) Yearly unloads are shown in Table A58.

TABLE A57.—*Potatoes (white)—Carload shipments by States of origin, 1917–1921, inclusive.*

State.	1917	1918	1919	1920	1921
Maine	19,688	16,048	22,601	18,833	26,183
New York	6,456	10,604	11,399	12,643	21,249
New Jersey	11,402	6,113	10,484	14,765	10,497
Pennsylvania	2,666	2,691	3,538	4,760	4,736
Maryland	2,536	1,144	1,996	3,459	2,676
Virginia	20,440	11,942	12,399	15,984	19,610
North Carolina	3,395	5,554	3,346	3,499	3,538
South Carolina	2,440	2,812	1,217	3,069	2,501
Florida	4,284	4,846	2,278	3,349	2,341
Michigan	5,187	10,271	11,844	9,539	14,409
Wisconsin	10,283	18,453	20,923	12,972	14,909
Minnesota	12,547	21,920	24,347	21,511	25,442
Iowa	440	934	.....	878	122
North Dakota	.....	1,628	2,917	1,620	9,086
South Dakota	966	1,223	757	1,720	3,063
Nebraska	1,518	3,163	2,534	2,389	4,467
Kansas	837	824	1,133	1,960	2,557
Kentucky	717	691	963	904	835
Alabama	633	586	.....	.....	694
Louisiana	1,063	4,045	553	892	1,143
Texas	1,689	2,317	806	733	1,111
Oklahoma	663	.....	678	579	252
Arkansas	339	.....	.....	.....	116
Montana	.....	.....	828	626	1,227
Wyoming	.....	.....	401	444	722
Colorado	9,791	14,145	12,765	8,957	11,920
Utah	667	567	476	480	1,111
Nevada	1,158	815	875	.....	552
Idaho	5,830	7,616	8,859	6,798	10,542
Washington	2,762	2,257	4,095	3,216	4,753
Oregon	3,436	1,816	1,276	1,085	1,619
California	6,570	10,933	9,081	9,296	8,078
All other	2,409	3,292	1,713	.....	1,372
Total	142,812	169,250	177,082	166,960	213,524

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years since each year they are becoming more and more complete by the inclusion of factors not previously covered.

TABLE A58.—*Potatoes (white)—Yearly unloads at 10 principal markets in car lots, 1916–1921.*

[Cars.]

Crop and year.	New York.	Chicago.	Philadelphia.	Pittsburgh.	St. Louis.	Cincinnati.
1916	20,629	12,125	6,568	7,327	2,867	1,618
1917	[1] 20,601	9,609	6,441	5,185	2,904	1,573
1918	19,330	12,477	6,813	6,516	2,739	1,538
1919	18,378	12,158	7,668	7,326	2,756	2,047
1920	17,424	11,302	7,190	5,614	2,019	2,189
1921	[2] 17,986	13,026	7,460	5,396	3,502	2,857
Average	[3] 19,058	11,783	7,025	6,227	2,895	1,968

Digitized by Google

TABLE A58.—*Potatoes (white)*—Continued.

Crop and year.	St. Paul.	Minneapolis.	Kansas City.	Washington.	Total.
1916	725	1,056	2,522	417	55,846
1917	410	1,196	2,546	439	[1] 50,904
1918	125	397	2,602	1,213	53,760
1919	150	498	2,521	1,000	54,502
1920	437	756	2,145	885	50,454
1921	594	845	2,257	1,153	55,166
Average	407	791	2,432	851	[2] 53,439

[1] Reports incomplete.
[2] An additional 152 cars received in less-than-carload lots.
[3] Including incomplete reports of 1917.

Sweet potatoes are largely grown in the Middle Atlantic and Southern States. Virginia is the outstanding State from the standpoint of shipments. (Tables A59, A60.)

TABLE A59.—*Sweet potatoes—Production by States, 1913–1921.*

[Bushels; 000 omitted.]

States.	1913	1914	1915	1916	1917	1918	1919	1920	1921
New Jersey	3,174	2,200	3,565	2,300	2,880	1,750	1,875	2,288	1,870
Pennsylvania	110	105	105	100	110	138	280	276	248
Delaware	675	600	675	625	560	966	1,380	1,152	900
Maryland	1,128	1,000	1,040	1,134	1,180	1,680	1,400	1,134	900
Virginia	3,564	2,852	3,740	5,070	4,160	4,750	6,020	5,334	4,180
West Virginia	182	184	220	280	280	230	345	357	345
North Carolina	8,000	6,840	8,925	9,309	8,550	9,858	9,309	10,296	10,302
South Carolina	4,600	4,060	6,825	5,676	7,600	7,560	6,480	7,980	7,885
Georgia	7,221	6,715	8,075	7,520	11,625	13,064	11,500	12,276	12,410
Florida	2,310	2,280	2,576	2,500	3,500	4,100	2,600	2,850	2,720
Ohio	90	110	95	99	95	115	300	309	321
Indiana	78	100	104	300	318	315	315	360	396
Illinois	560	672	880	720	776	855	855	873	990
Iowa	160	200	285	273	270	320	201	416	312
Missouri	336	504	700	490	896	832	1,248	1,430	1,400
Kansas	250	550	440	368	368	436	436	540	500
Kentucky	675	1,050	1,050	900	1,140	1,680	1,890	1,890	1,872
Tennessee	1,600	2,500	2,835	2,700	2,850	4,400	4,480	4,284	4,400
Alabama	6,650	5,859	7,200	6,290	16,020	14,194	10,662	11,446	12,150
Mississippi	5,390	4,500	7,700	6,314	5,525	10,290	10,290	11,330	8,560
Louisiana	5,100	5,133	5,980	5,760	4,898	6,300	6,300	8,080	8,272
Texas	4,000	5,252	5,880	7,120	6,552	10,450	10,450	9,975	8,200
Oklahoma	384	612	690	962	1,350	3,000	2,640	2,645	2,646
Arkansas	1,800	1,710	3,900	3,185	4,400	4,600	4,600	5,145	5,670
New Mexico	.....	.....	.....	.....	.....	450	120	118	126
Arizona	.....	.....	.....	.....	236	150	150	125	125
California	1,020	966	810	960	1,002	1,096	1,040	1,016	960
Total	59,057	56,574	74,295	70,955	87,141	103,579	97,146	103,925	98,660

TABLE A60.—*Potatoes (sweet)—Carload shipments by States of origin, 1919–1921, inclusive.*

States.	1919	1920	1921	States.	1919	1920	1921
New Jersey	1,881	2,590	2,783	Mississippi	103	59	108
Delaware	1,095	1,431	1,941	Louisiana	194	407	580
Maryland	930	1,363	1,498	Texas	451	492	630
Virginia	5,754	5,198	5,255	Arkansas	193	339	446
North Carolina	666	859	941	New Mexico	.....	29	34
Georgia	400	640	985	California	718	687	728
Florida	85	67	91	All others	78	94	391
Illinois	205	208	118				
Tennessee	596	1,153	1,149	Total	13,713	16,095	18,250
Alabama	364	471	572				

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide, but can not be regarded as indicating the total movement, nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

Digitized by Google

Strawberries.—Areas of strawberry production are somewhat widely distributed throughout the country. (Table A61.) Yearly unloads of the crop are shown in Table A62.

TABLE A61.—*Strawberries—Commercial production by States, 1916–1921.*

[Cars of 450 crates.]

States.	1916	1917	1918	1919	1920	1921
Alabama	316	196	338	212	149	224
Arkansas	1,697	1,096	1,105	1,519	1,373	1,691
California	368	245	1,010	714	648	762
Colorado	3	13	.....	.....	.....	.....
Connecticut	45	5	.....	.....	.....	.....
Delaware	.....	2,340	758	638	579	842
Florida	254	193	193	128	217	140
Illinois	436	347	383	536	429	390
Indiana	23	76	151	184	141	95
Iowa	20	47	108	89	82	65
Kansas	152	7	40	53	51	29
Kentucky	412	676	675	249	489	794
Louisiana	1,643	1,100	763	520	848	1,454
Maryland	201	2,193	1,038	868	921	1,338
Massachusetts	158	55	.....	.....	.....	.....
Michigan	106	475	472	1,129	882	855
Mississippi	205	91	107	105	102	77
Missouri	1,114	673	985	993	747	1,009
New Jersey	1,081	829	742	888	744	900
New York	290	210	561	631	563	698
North Carolina	678	696	704	581	431	542
Ohio	7	22	412	480	470	476
Oregon	137	106	442	432	475	800
Pennsylvania	1	5	442	435	475	592
South Carolina	12	19	40	17	14	15
Tennessee	2,211	1,781	1,495	1,833	1,668	2,092
Texas	137	121	94	34	60	67
Virginia	555	1,352	635	383	445	805
Washington	130	53	242	426	458	702
Wisconsin	13	43	93	98	98	64
Peninsula	3,831	.....	.....	.....	.....	.....
Total	16,236	15,065	14,028	14,175	13,559	17,418

TABLE A62.—*Strawberries— Yearly unloads at 10 principal markets in car lots, 1916–1921.*

[Carloads.]

Crop and year.	New York.	Chicago.	Philadelphia.	Pittsburgh.	St. Louis.	Cincinnati.
1916	2,780	1,669	585	642	181	251
1917	2,771	910	679	435	89	287
1918	1,206	876	304	271	77	255
1919	898	1,246	243	166	45	232
1920	1,202	909	291	185	43	80
1921	[1] 1,101	1,499	300	321	132	356
Average	1,660	1,185	400	337	102	244

Crop and year.	St. Paul.	Minneapolis.	Kansas City.	Washington.	Total.
1916	180	318	221	7	6,834
1917	82	199	173	10	5,635
1918	52	119	100	18	3,278
1919	58	101	50	50	3,089
1920	49	84	68	75	3,028
1921	72	147	180	50	[1] 4,158
Average	82	161	132	35	4,337

[1] An additional 822 cars received in less than carloads

Digitized by Google

Tomatoes.—Florida stands out prominently as the leading tomato-shipping State of the Union. Shipments of tomatoes by States are shown in Table A63.

TABLE A63.—*Tomatoes—Carload shipments by States of origin, 1917–1921.*

States.	1917	1918	1919	1920	1921
Connecticut					10
New York	143	381	457	746	1,084
New Jersey	2,239	2,006	1,012	2,330	1,959
Pennsylvania		53	390	39	23
Delaware	877	1,130	502	153	193
Maryland	237	200	206	135	127
Virginia	173	97			85
West Virginia					28
South Carolina			26		73
Florida	4,496	3,700	4,487	3,749	5,769
Ohio	623	799	489	302	307
Indiana	524	1,150	948	917	441
Illinois	487	393	234	341	147
Iowa			29		12
Missouri	97	89	147		11
Kentucky	93			559	367
Tennessee	947	654	368	805	357
Mississippi	1,063	1,379	1,388	1,363	1,961
Texas	1,278	1,123	1,205	1,286	1,953
Arkansas				24	22
Utah		633	338	251	100
Washington				62	30
California	519	1,514	2,186	1,393	1,535
All others	115	170	91	144	58
Total	13,916	15,471	14,503	14,599	16,652

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide, but can not be regarded as indicating the total movement, nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

Department of Agriculture, Bureau of Markets and Crop Estimates.

Watermelons.—Commercial supplies of watermelons come largely from Southern States. Georgia leads on States in watermelon production. Production and carload shipments of watermelons by States are shown in Tables A64 and A65, respectively.

TABLE A64.—*Watermelons—Commercial production, by States, 1918–1921.*

[Cars; 1,000 melons.]

State.	1918	1919	1920	1921
Alabama	1,459	1,678	1,832	2,529
Arizona	50	344	202	480
Arkansas	292	1,190	2,598	1,924
California	2,280	3,994	5,954	6,022
Colorado	65	242	318	353
Delaware	468	834	680	622
Florida	2,689	4,828	10,171	8,108
Georgia	8,896	9,583	14,937	15,158
Illinois	396	873	1,014	1,894
Indiana	415	1,378	2,027	2,331
Iowa	222	892	932	839
Maryland	285	1,131	1,099	1,297
Missouri	2,070	3,836	4,292	4,473
North Carolina	942	1,234	1,779	2,347
Oklahoma	701	2,213	2,544	947
South Carolina	2,988	2,840	3,458	2,089
Texas	3,267	5,024	7,995	9,032
Virginia	1,125	1,110	1,160	1,472
Total	28,600	43,224	62,992	61,917

Digitized by Google

TABLE A65.—*Watermelons—Carload shipments, by States of origin, 1919–1921.*

State.	1919	1920	1921	State.	1919	1920	1921
Delaware	327	179	496	Alabama	708	1,156	1,415
Maryland	515	423	745	Texas	3,007	4,829	4,093
Virginia	263	312	359	Oklahoma	870	464	548
North Carolina	891	799	1,267	Arkansas	268	312	521
South Carolina	2,673	4,735	4,414	Colorado	211	71	154
Georgia	8,984	11,103	15,907	Arizona	121	.....	32
Florida	3,878	6,807	5,743	Washington	143	195	142
Indiana	581	661	723	California	2,300	3,242	3,543
Illinois	190	218	352	All others	89	246	549
Michigan	90	59	.....				
Iowa	321	312	839	Total	30,946	39,135	45,003
Missouri	3,516	3,012	3,156				

NOTE.—Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement: nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete by the inclusion of factors not previously covered.

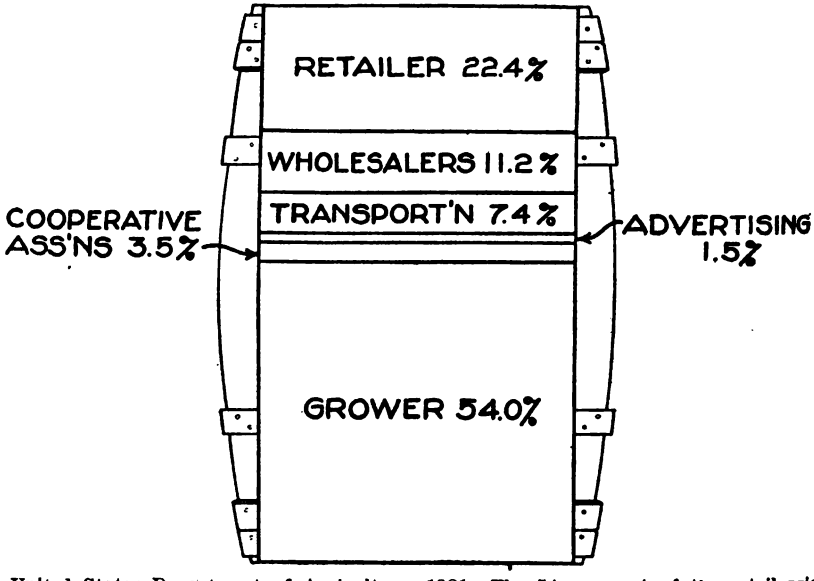
Cranberries.—Chart A36 shows the various factors entering into the cost of cranberries to the consumer. Attention is called to the relationship between transportation and other cost factors.

Chart A 36.

DIVISION OF RECEIPTS FROM SALE OF A BARREL OF CRANBERRIES, 1920.

BASED ON RETAIL PRICE OF 18 CENTS PER POUND.

[Barrel contains 100 pounds.]



United States Department of Agriculture, 1921: The 54 per cent of the retail price received by the grower for producing and packing cranberries is well above the amount received by producers of most other perishable fruit and vegetable products.

THE CANNERIES.

The canning industry is closely associated with the welfare and prosperity of the farmer. Deflation in agriculture reflects itself

Digitized by Google

almost immediately in this industry. In order to give a comprehensive outline of the trend of production with special reference to the deflation in 1921, the total production of 4,017,000 cases of canned tomatoes in 1921 did not reach the annual average production for the 10-year period prior to 1918 of Maryland alone, which under normal conditions cans more tomatoes than any other three States in the Union. The production in this State fell from 3,347,000 cases in 1920 to 1,656,000 cases in 1921.

Similar marked reductions in the production of canned corn is evident. Iowa, the largest producer, canned 3.246,000 cases in 1920 and only 1,190,000 cases in 1921.

The total decrease in the production of canned peas was approximately 33 per cent from the peak of 12,317,000 cases in 1920, to 8,207,000 cases in 1921.

It is conservatively estimated that the production of all canned fruits and vegetables in 1921 did not exceed 75 per cent of the 1919 total.

The total number of canneries increased from 2,600 in 1900 to 2,800 for 1921. The industry is financed to a large degree through the extension of credit by wholesale grocers and commission men. The general deflation in 1921, together with the large losses in inventories of sugar and other commodities among wholesale grocers, restricted to a large degree the financial resources of the canneries, and these factors, coupled with the dumping of hold-over supplies of staple canned goods, mainly by the Government, which bought enormous quantities for war purposes in 1918 and 1919, are the principal causes of the depression in this industry.

Generally speaking, the distribution of the majority of canned goods is within a radius of 500 miles. There are exceptions, as is shown by the shipment of canned goods from the North Pacific coast and California to the Atlantic coast, usually by rail, but at present in large quantities by water. The costs on long hauls are forcing much business through the Panama Canal and at appreciably lower rates of carriage. The existing freight cost per case is substantially lower in relationship to value of the product than the freight cost of the so-called basic commodities, including grains.

When this transportation expense is spread over the number of cans contained in the case the actual effect of the present freight cost upon the consumers' ability to purchase is negligible. It can not be said, taking the canning industry as a whole, that the existing freight rates have curtailed production, distribution, or consumption, but other causes are in the main responsible for the depression in this industry. If these causes were corrected, the freight cost would not prevent the resumption of a normal production or normal price.

When moved by rail, box cars are required for the transportation of canned goods, which load to an average of 23.5 tons per car. The car supply generally has been sufficient to take care of the demands of the canners. An important point in favor of the industry is the fact that the distribution of their commodities proceeds uninterruptedly throughout the year.

In comparison with other commodities there is nothing in the Commission's investigation to show that rate reductions on canned

Digitized by Google

goods should have preferential treatment while the rates on so many basic commodities remain at their existing levels.

GRAIN AND GRAIN PRODUCTS.

The handling and merchandising of grain and grain products have been the subject of frequent inquiry and investigation. These investigations have been conducted under either State or Federal authority. They have been prompted by:

(*a*) The unfortunate position of the producer when prices have reached an unreasonably low level.

(*b*) Complaints of the consuming public when prices advance to an unreasonably high level.

There are many factors interwoven and essential in the distribution of grain and its products. The price paid to the producer, the price paid by the consumer, and the intermediate cost of handling (such as railroad transportation, elevation, milling, and treatment in transit and distribution) are so related that some reference must necessarily be made to certain phases of the handling that otherwise might not be properly considered as related to this particular part of the report.

TRANSPORTATION AND TRANSPORTATION FACILITIES.

The grain producers of the country will be most prosperous when, through a flexible method of rate making, the producers are able to reach on a relative parity a number of competing markets, and through such markets the greatest possible number of ultimate consumers—that is, the producer and consumer are jointly interested in the through-freight charge as well as in the rate to the market and in the rate from the market.

Upon the railroads serving the grain-originating territory rests the responsibility of supplying empty cars in adequate volume and of a suitable kind to handle the crop promptly. Following the harvest, a very considerable portion of the grain must be moved from the farm to the country elevators and thence to the primary market. Grain must be moved from the farm before it is damaged by adverse weather conditions. The capacity of country elevators is usually insufficient to care for the volume of grain as it is brought from the farm. Consequently, the railroad must be in a position to take grain away from the elevator or loading station promptly and avoid blocking the elevator. Grain being handled largely in bulk, the character of the equipment supplied must be of the best. Cars must be tight to avoid loss in transit and afford full protection from the weather to avoid damage. The grain loading being heaviest during the last six months of the year, with the peak movement occurring during August, September, and October, the railroads have ample opportunity to condition freight equipment in anticipation of this heavy movement. They may also keep advised of the probable extent of the crop movement and arrange an ample supply of cars to meet the expected demand. In this matter there rests upon the carriers a heavy responsibility. Not only should the present freight equipment be placed in proper condition, but such additional equipment should be constructed as may be necessary to fully meet the de-

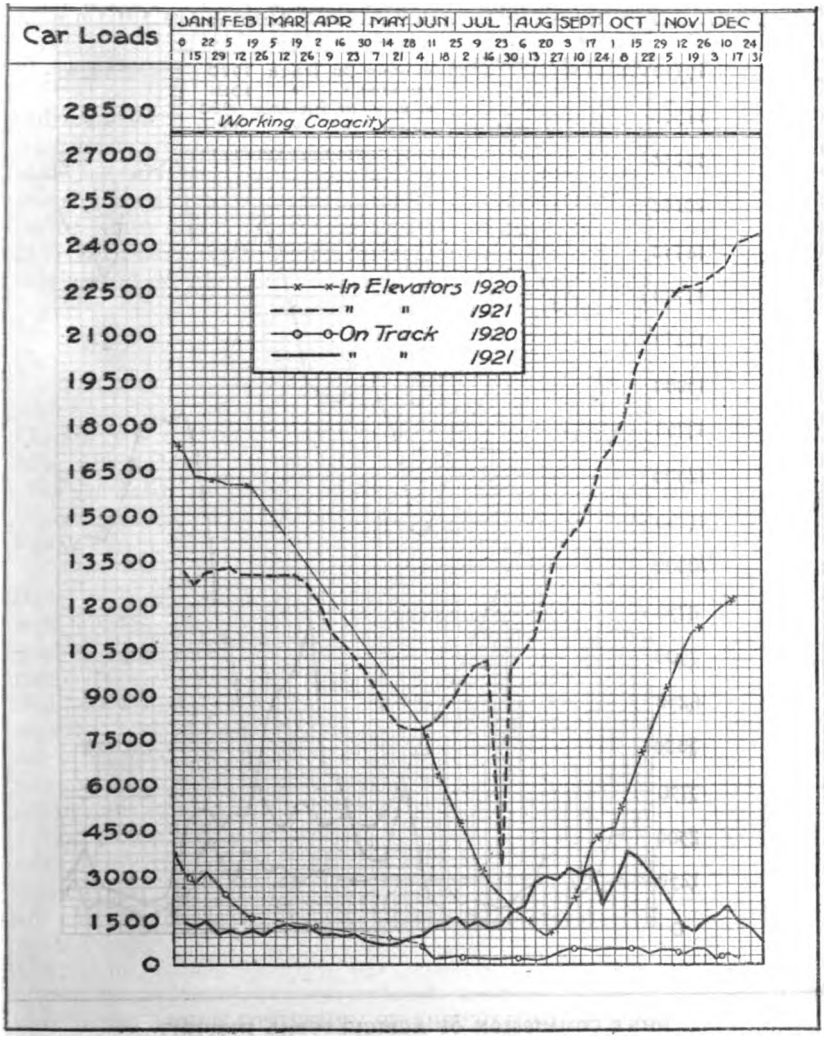
Digitized by Google

mand. Furthermore, cars should be returned to the originating carrier promptly so that they may be available for repeated use.

During the heavy shipping period grain moves from the country to the primary markets and shipments of grain and its products move from the terminal points in trainload lots.

Chart A 37.

GRAIN SITUATION AT PRIMARY MARKETS: MINNEAPOLIS, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

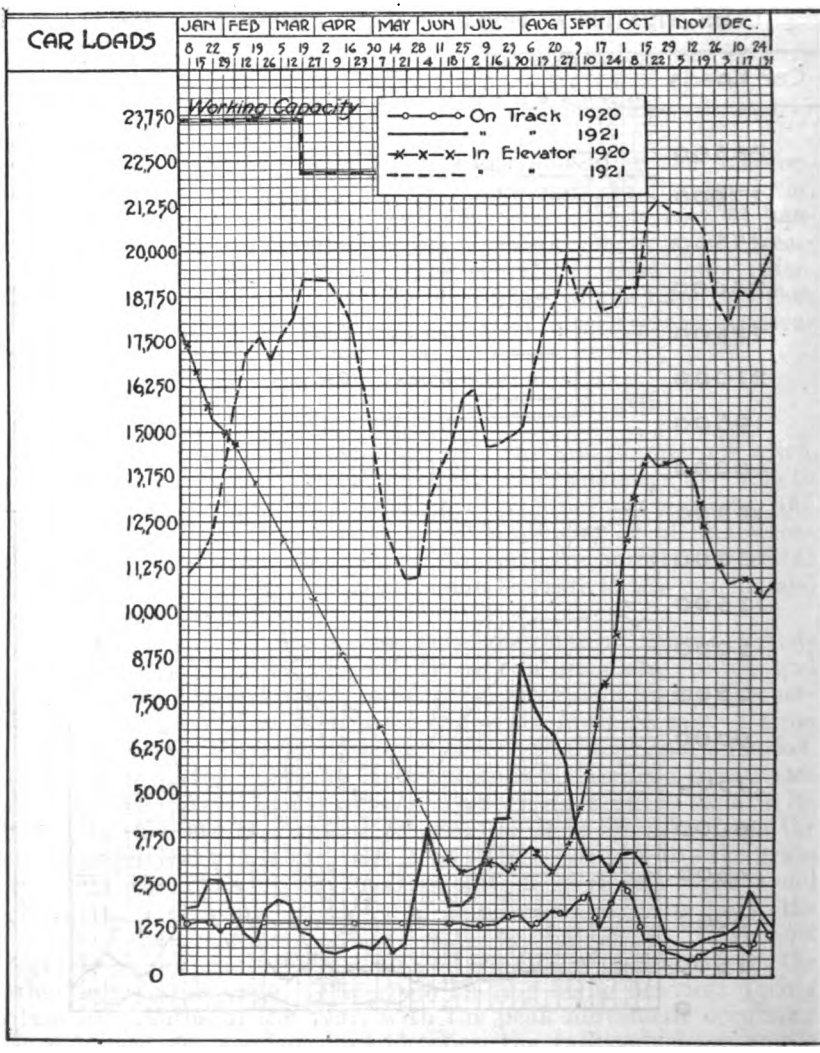
Charts A37 to A45, inclusive, show carloads of grain in elevators and on track for the season 1920 and 1921 in relation to working capacity. There is a wide variation in the amount of grain on track

Digitized by Google

and in elevators at different periods of the year; a wide variation from year to year, and in the relation of carloads of grain to track and elevator capacity in different markets. For example, in both Chicago

Chart A 38.

GRAIN SITUATION AT PRIMARY MARKETS: CHICAGO, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

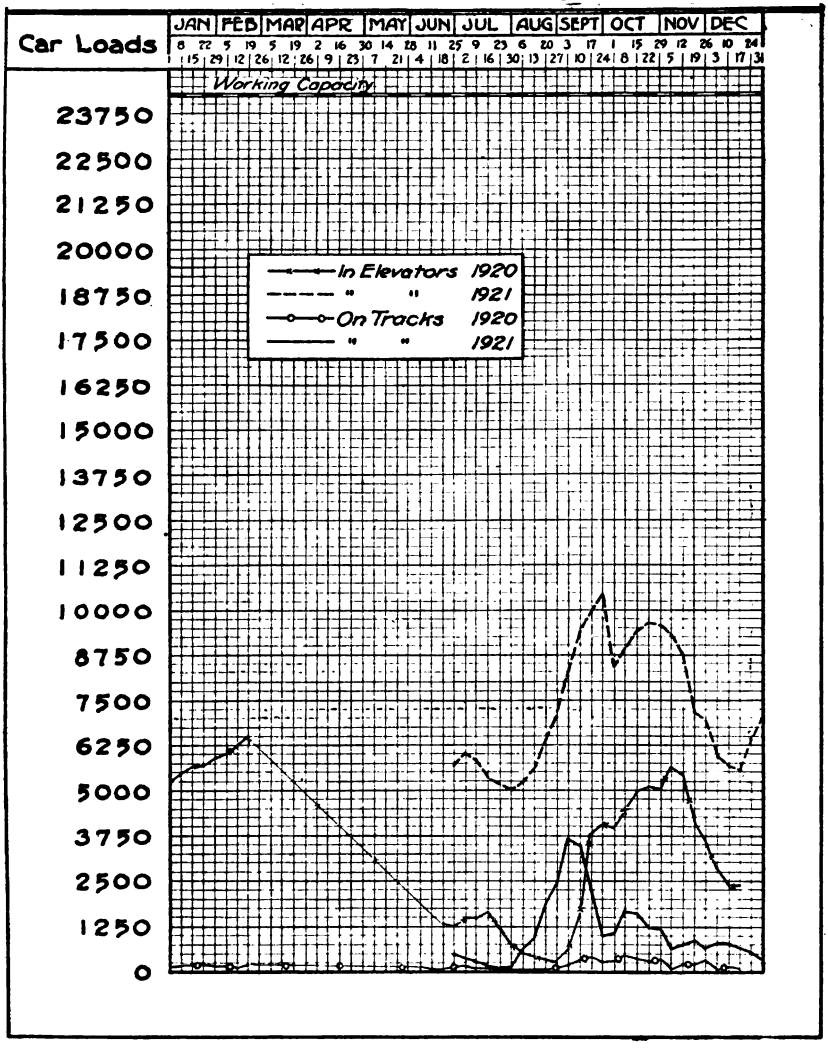
and Minneapolis in 1921 the elevator capacity was used during the crop-moving season nearly to capacity, while in Duluth the elevator capacity does not seem to have been approached at any time during the period covered by the charts.

Digitized by Google

The available track or elevator capacity is an important element in the movement of grain, especially for export. Congestion in terminals could in some degree be avoided by current information show-

Chart A 39.

GRAIN SITUATION AT PRIMARY MARKETS: DULUTH, 1920-21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

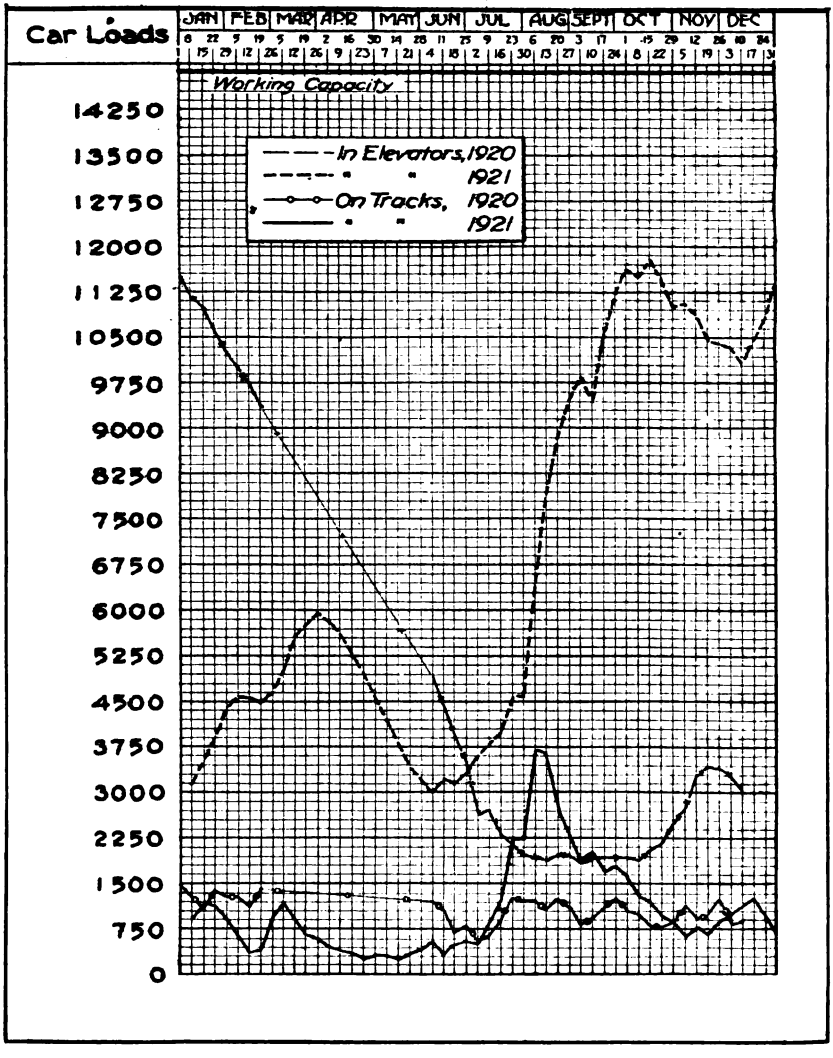
ing the relation of receipts to working capacity on tracks and in elevators. Such figures also would be useful in indicating the trend of traffic, the periods at which volume is the greatest, and the necessity or lack of necessity for added working capacity.

Digitized by Google

Charts A46 to A52 on pages 90 to 98 show the relation of carloads of grain on track and in elevators to working capacity of track and elevators in 1920 and 1921 at typical seaport points. As in the case

Chart A 40.

GRAIN SITUATION AT PRIMARY MARKETS: KANSAS CITY, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

of primary markets, there is a wide variation in the relation of grain in elevators and on tracks to working capacity as between different ports. This is markedly illustrated by a contrast of chart A46, showing the situation at New York; chart A52 on page 98 showing the

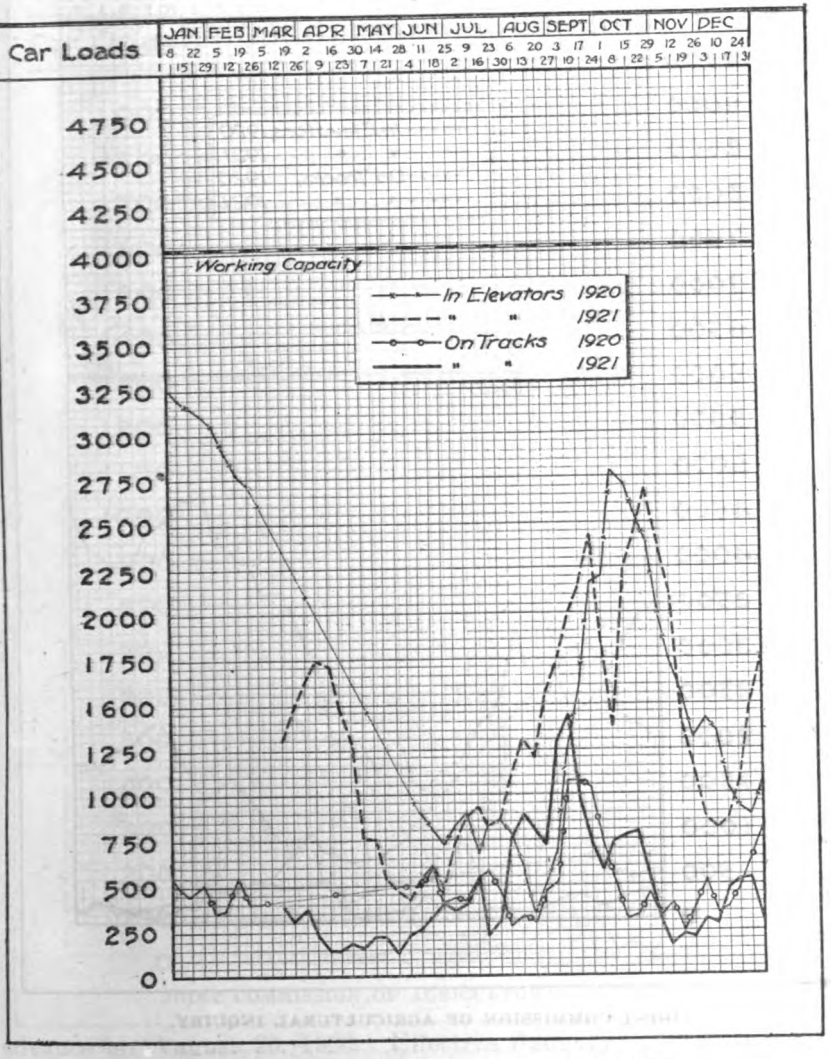
Digitized by Google

situation at Galveston; and chart A50 on page 96 showing the situation at Newport News.

Current figures of this character, if available to railroads, shippers, and shipowners, would make possible the diversion of tonnage

Chart A 41.

GRAIN SITUATION AT PRIMARY MARKETS: MILWAUKEE, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

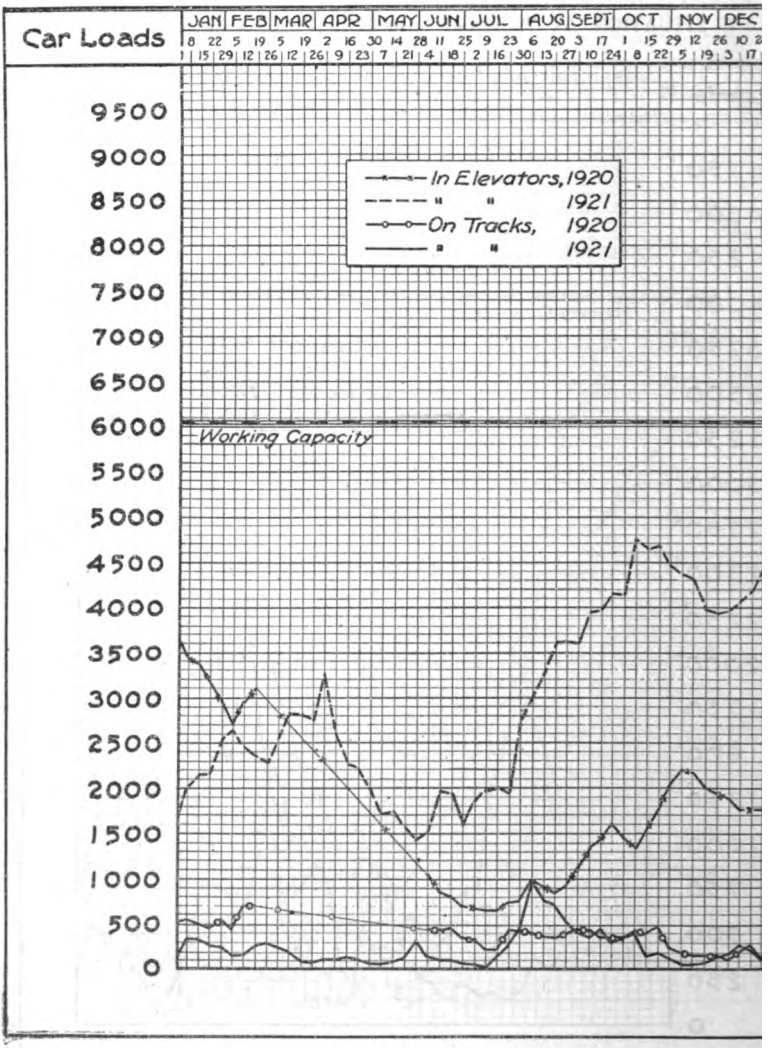
from congested ports to uncongested ports. In New York particularly, but as well in other seaports, as indicated by these charts, grain on tracks and in elevators exceeds the working capacity. This means congestion, which, as indicated, could be avoided by a proper distribution of the traffic.

Digitized by Google

Grain is subject to inspection by either Federal or State au
ties, but seldom is there more than one inspection except in ca
disputed grade.

Chart A 42.

GRAIN SITUATION AT PRIMARY MARKETS: OMAHA AND COUNCIL BLUFFS,



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

PRICE PAID PRODUCER VERSUS PRICE OBTAINED BY COUNTRY ELEVATOR.

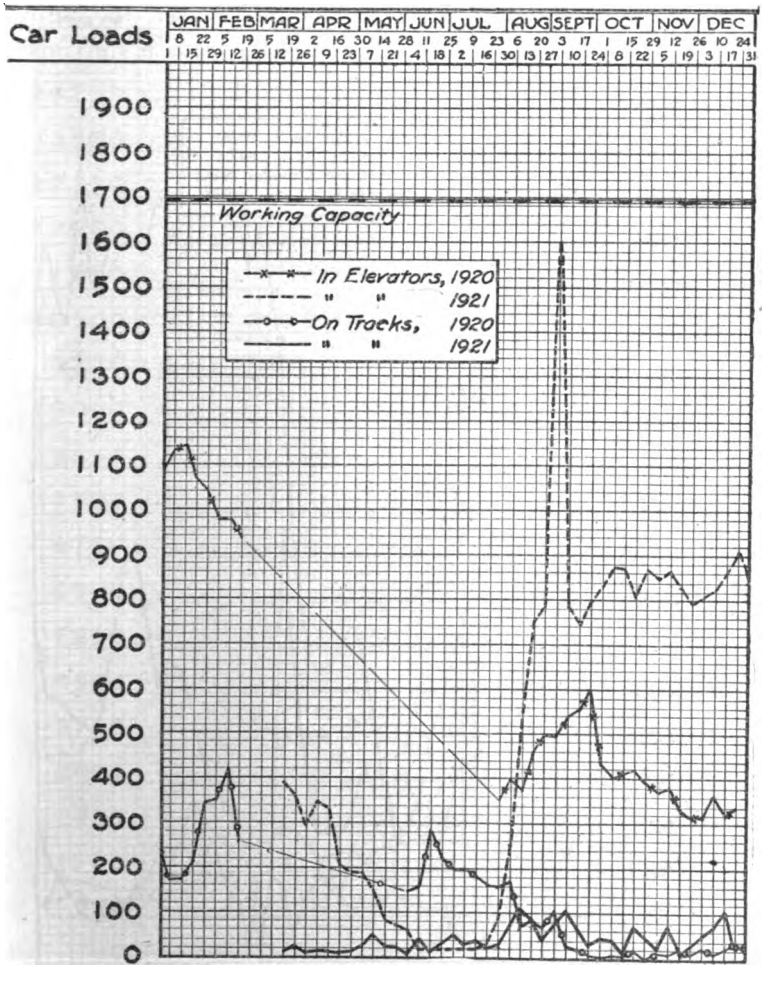
The prevailing margin in Kansas between the price paid th
ducer and the "track bid" price to the elevator has increased
3 cents per bushel in 1913 to 6 cents per bushel in 1916 and

Digitized by Google

cents in 1921. Margins in the spring-wheat area are about 1 cent higher than in the winter-wheat area for the corresponding periods. Freight rates throughout that territory have been increased since 1914 by 25 per cent advance on June 25, 1918, and 35 per cent

Chart A 43.

GRAIN SITUATION AT PRIMARY MARKETS: PEORIA, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

advance on August 26, 1920. Effective January 1, 1922, a reduction in these rates was made on wheat equivalent to one-half of the increase made on August 26, 1920, and a further decrease was made on coarse grain by establishing rates thereon on the basis of 90 per cent of the new wheat rates made effective January 1, 1922. In establishing throughout this territory rates on coarse grain based

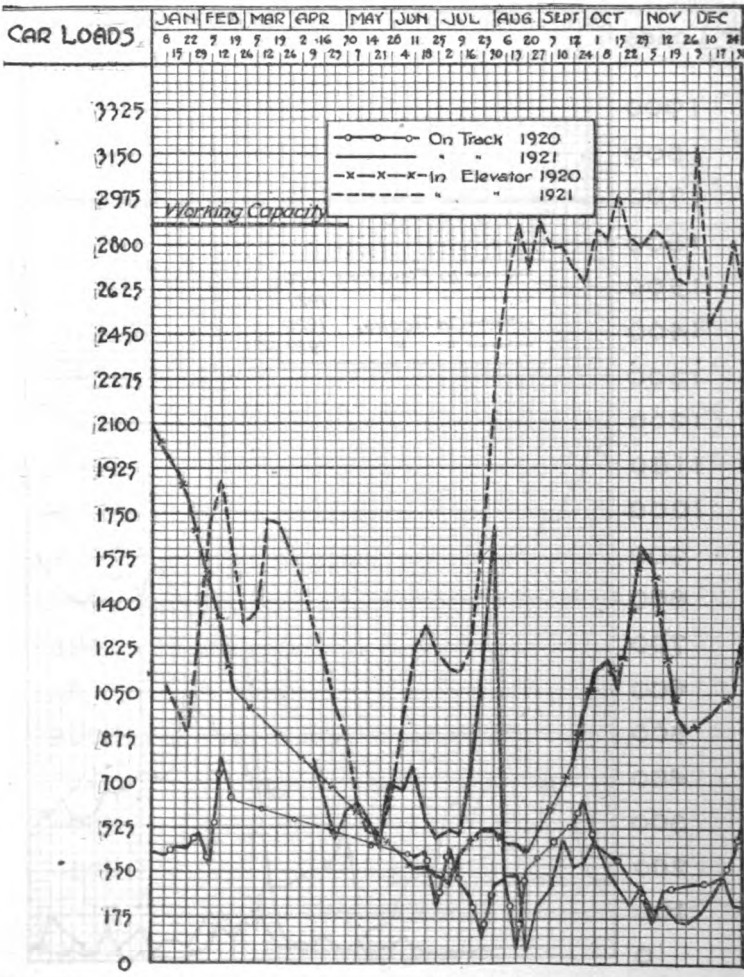
Digitized by Google

upon 90 per cent of the rates applying on wheat the commi
believes a reasonable relationship is recognized.

The situation in Kansas exists generally throughout the wi
wheat territory in Nebraska and Oklahoma.

Chart A 44.

GRAIN SITUATION AT PRIMARY MARKETS: ST, LOUIS, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

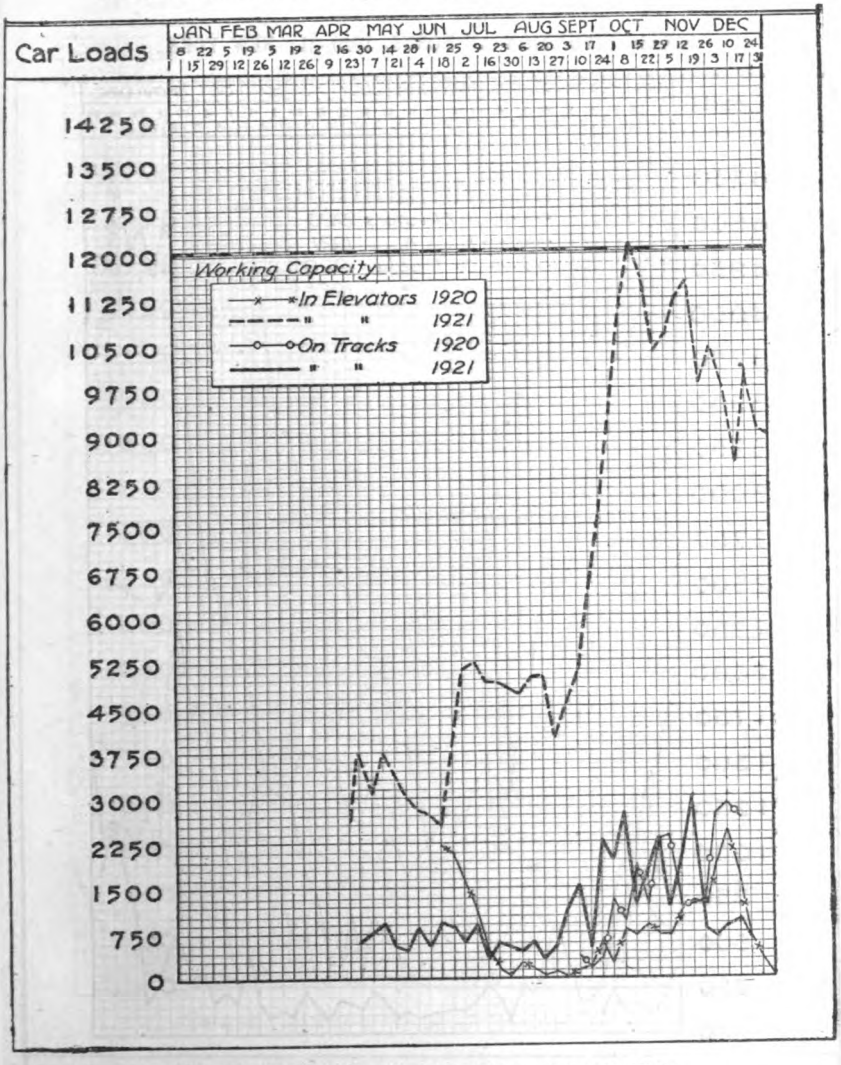
It is possible to market grain from this territory for export
either the Gulf ports or the Atlantic seaboard. It can reach p
cally all of the primary markets to advantage, and in addition th
enjoys the advantage of competition resulting from the bu
power of the local mills, the mills at Minneapolis, Minn., an

Digitized by Google

mills in all the territory east thereof. The buying margin throughout all winter-wheat territory, including the States of Ohio, Indiana, and Illinois, is approximately the same. The last-mentioned

Chart A 45.

GRAIN SITUATION AT PRIMARY MARKETS: BUFFALO, 1920–21.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

States can not use to advantage the Duluth, Minneapolis, and Missouri River markets, but they are near to a vast consuming territory immediately east thereof and south of the Ohio River.

To a considerable extent the surplus grain from Ohio, Indiana, and Illinois is sold on "track bids" at the station or is consigned to

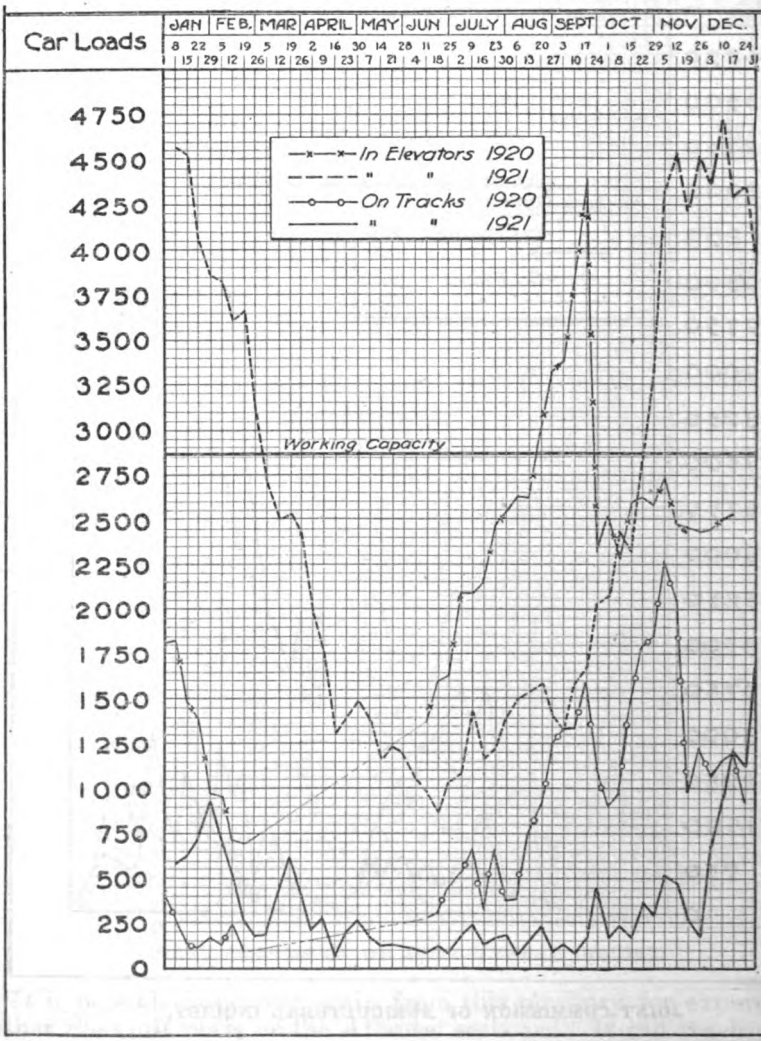
Digitized by Google

such markets as Chicago, St. Louis, Cincinnati, etc., for sale
arrival, being distributed largely in the territory south of the
River.

Throughout the Northwestern States considerable durum wh
grown; it is largely exported, not being suitable for the

Chart A 46.

GRAIN SITUATION AT PORTS, 1920–21: NEW YORK.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

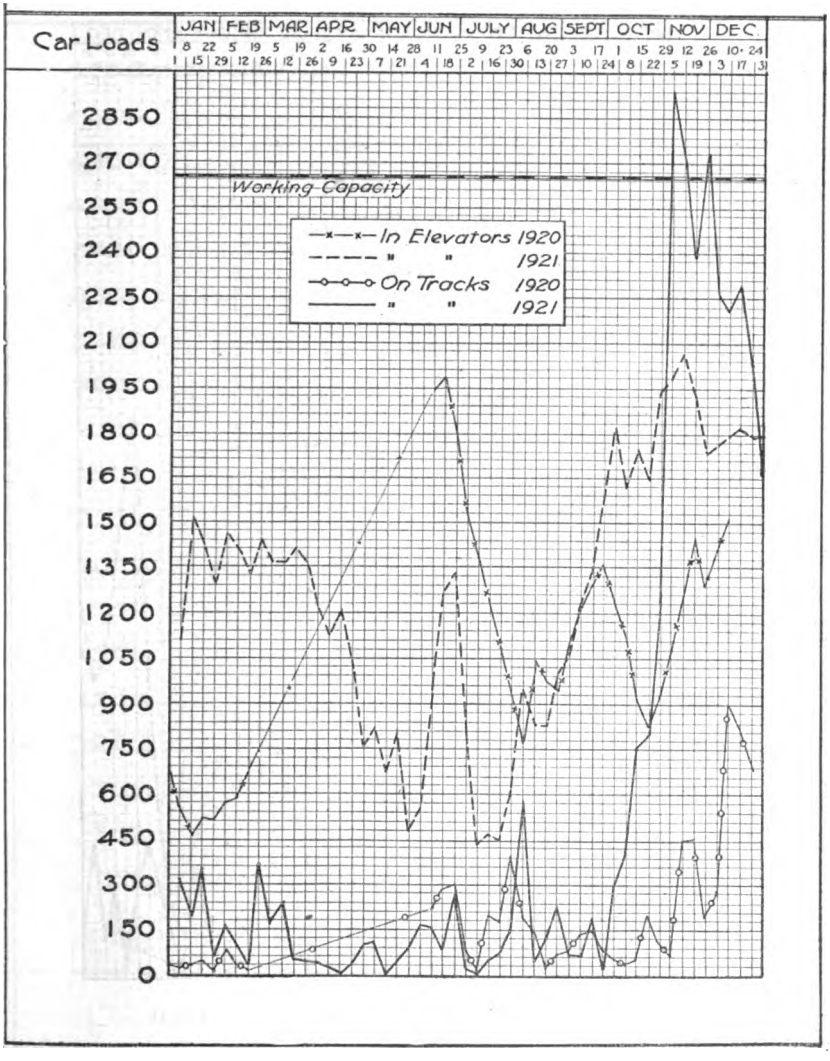
facture of bread-wheat flour. The remainder of the wheat
in these Northwestern States is largely spring wheat, from w
very high-grade flour is produced. The production is consid

Digitized by Google

in excess of consumption within that territory, and the surplus not only of wheat and its products but of all grains is merchandised largely throughout the territory east of Chicago. Transpor-

Chart A 47.

GRAIN SITUATION AT PORTS, 1920–21: PHILADELPHIA.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

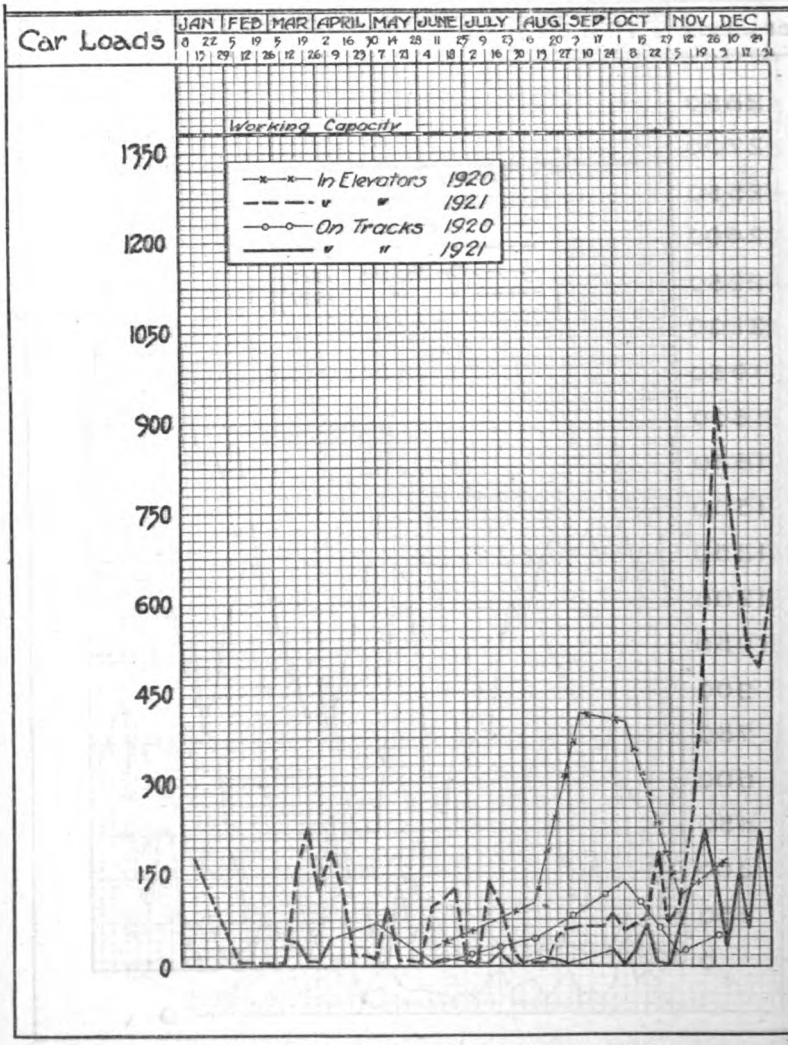
tation through Duluth and via the Great Lakes is an important factor in the distribution of the northwestern grain production, although local conditions, and particularly the requirements of wheat-flour mills located within the State of Minnesota with a

Digitized by Google

daily milling capacity of 178,425 barrels, equivalent to over 80
bushels of wheat per day, are most important. These mills purc
this wheat in open competition with the mills at Buffalo and

Chart A 48.

GRAIN SITUATION AT PORTS, 1920–21: BOSTON.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

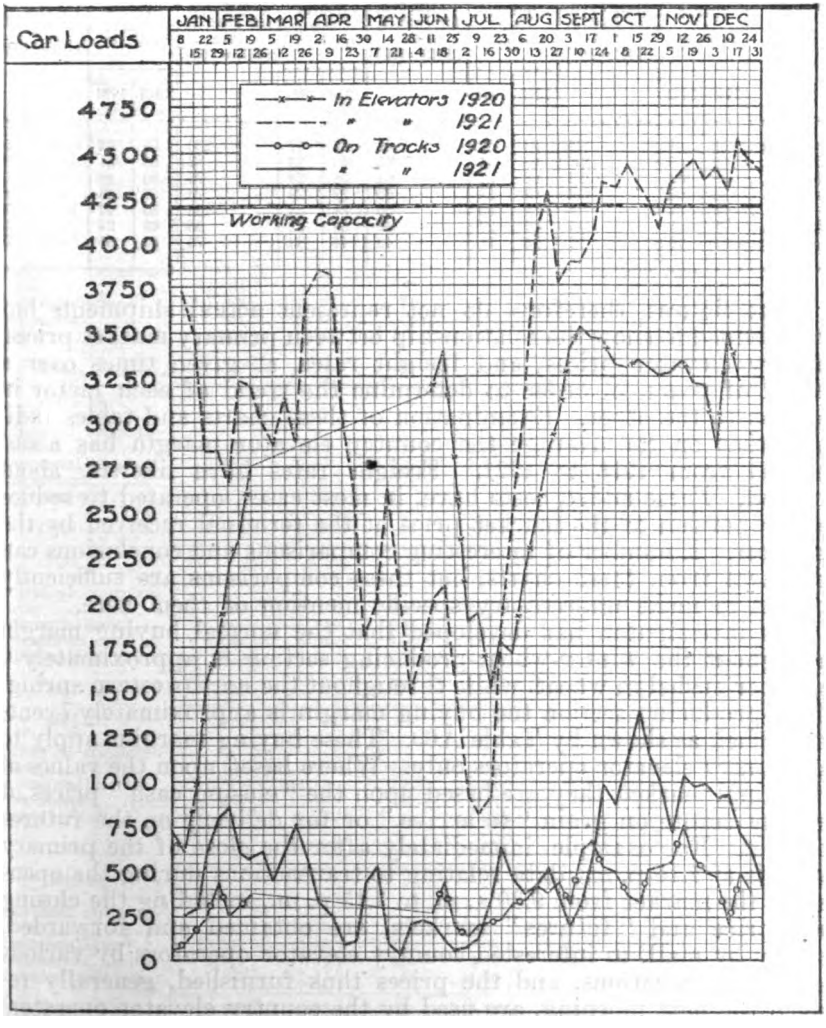
Lake Erie points and points east thereof. These eastern mills
low transportation rates via the Lakes and make shipmen
cargo lots.

Digitized by Google

Table A68 gives comparison of farm prices at New York and in other States located at various distances from New York, on wheat,

Chart A 49.

GRAIN SITUATION AT PORTS, 1920–21: BALTIMORE.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

corn, oats, and barley. The object of this table is to show the effect upon farm prices of distance from the Atlantic seaboard.

Digitized by Google

TABLE A68.—*Comparison of farm prices.*

State.	Wheat.			Corn.			Oats.			Barley.		
	Farm price Dec. 1 (cents per bushel).		Index No. for Dec. 1, 1921 (1913=100).	Farm price Dec. 1 (cents per bushel).		Index No. for Dec. 1, 1921 (1913=100).	Farm price Dec. 1 (cents per bushel).		Index No. for Dec. 1, 1921 (1913=100).	Farm price Dec. 1 (cents per bushel).		Index No. for Dec. 1, 1921 (1913=100).
	1913	1921		1913	1921		1913	1921		1913	1921	
New York.	93	108	116	81	67	83	47	47	100	69	62	90
Ohio.....	90	108	120	63	41	65	40	33	83	58	51	88
Indiana....	88	106	121	60	37	62	38	29	76	50	48	96
Illinois.....	86	100	116	63	38	60	38	29	76	57	46	81
Iowa.....	76	88	116	60	30	50	34	23	68	55	42	76
Nebraska...	71	83	117	65	27	42	38	21	55	49	28	57
Colorado...	78	76	97	73	31	42	44	33	75	56	37	66

These figures, therefore, do not represent actual shipments but are intended to show the relationship between primary market prices, country elevator prices, and freight rates, at given times over a period of years, in order to determine the trend of each factor in relation to the other. Examination of these charts and tables indicates that on the average the country elevator margin has about doubled from 1916 to 1921. Freight rates have likewise about doubled. These added costs have, in most cases, operated to reduce the proportion of the market price at the terminal received by the producer. A number of interesting comparisons and conclusions can be drawn from these charts, but these comparisons are sufficiently obvious to make unnecessary specific mention of them here.

This investigaton has developed that the normal buying margin throughout the winter-wheat-producing section is approximately 6 cents per bushel in wheat, while throughout the northwestern spring-wheat-producing section the buying margin is approximately 7 cents per bushel, as shown by Table A69. These buying margins apply to the country elevator operators only. Where based upon the values at a terminal market, they are based upon the "closing cash" prices of the day before on grain "to arrive" or for delivery on the futures contract. For example, immediately after the close of the primary markets at 1.15 p. m., data relating to transactions during the opening of the market from 9.30 a. m. to 1.15 p. m., including the closing cash price and "futures" markets, are obtained and forwarded, usually by mail, to interested country elevator operators by various service organizations, and the prices thus furnished, generally received the next morning, are used by the country elevator operators as a basis of the local price.

The average buying margins,[1] as found by the Federal Trade Commission to exist from 1912–1917, shown on page 192, Volume I, Country Grain Marketing, are reproduced in Table A69.

[1] Difference between the average daily prices paid by country elevators and the terminal market price (less freight) at which the greatest number of cars was sold on the same day.

Digitized by Google

TABLE A69.

Type and period.	No. 1 northern.		No. 3 northern.		No. 3 white oats.		No. 2 rye.	
	Number of daily margins.	Average margin in cents per bushel.	Number of daily margins.	Average margin in cents per bushel.	Number of daily margins.	Average margin in cents per bushel.	Number of daily margins.	Average margin in cents per bushel.
1912–13.								
Individual cooperatives	949	4.35	176	5.79	162	3.00	10	7.66
Commercial lines [1]	2,394	4.82	29	6.56	62	2.63	47	5.74
Independent	339	4.72	49	5.56	34	4.53	.....	.....
Individual mill	195	3.79	.....	.....	.....	.....	.....	.....
Total	3,877	4.64	254	5.83	258	3.11	57	5.86
1913–14.								
Individual cooperatives	1,334	3.46	7	4.79	155	3.09	.....	.....
Commercial lines [1]	3,044	3.02	74	3.39	391	3.19	96	4.87
Independent	641	3.91	.....	.....	.....	.....	.....	.....
Individual mill	131	2.86	.....	.....	.....	.....	.....	.....
Total	5,150	3.24	81	3.52	546	3.16	96	4.87
1914–15.								
Individual cooperatives	1,482	6.38	617	8.44	305	3.62	77	6.37
Commercial lines [1]	2,430	5.02	1,102	8.67	521	3.93	252	6.66
Independent	503	8.27	303	9.34	75	3.70	.....	.....
Individual mill	277	8.28	.....	.....	.....	.....	.....	.....
Total	4,692	5.99	2,022	8.70	901	3.81	329	6.59
1915–16.								
Individual cooperatives	3,669	5.29	356	7.49	322	3.67	166	5.52
Commercial lines [1]	6,211	5.32	830	7.12	639	3.57	510	5.63
Independent	1,094	6.54	111	7.66	56	2.72	39	5.94
Individual mill	350	7.58	.....	.....	.....	.....	.....	.....
Total	11,324	5.50	1,297	7.26	1,017	3.55	715	5.62
1916–17.								
Individual cooperatives	2,197	10.92	649	15.38	415	3.08	233	8.40
Commercial lines [1]	1,519	11.87	703	15.08	488	1.45	526	6.90
Independent	337	15.17	27	7.08	104	2.63	33	12.13
Individual mill	244	10.22	41	14.09	.....	.....	.....	.....
Total	4,297	11.55	1,420	15.03	1,007	3.21	792	7.56
1912–17.								
Individual cooperatives	9,631	6.39	1,805	10.47	1,359	3.33	486	7.08
Commercial lines [1]	15,598	5.39	2,738	9.68	2,101	3.53	1,431	6.22
Independent	2,914	7.04	490	8.46	269	3.19	72	8.78
Individual mill	1,197	7.15	41	14.09	.....	.....	.....	.....
Total	29,340	5.95	5,074	9.88	3,729	3.44	1,989	6.52

[1] Includes a certain proportion of Northwestern lines owned by or affiliated with mills, but which operate as merchandisers in all essential respects like the commercial lines.

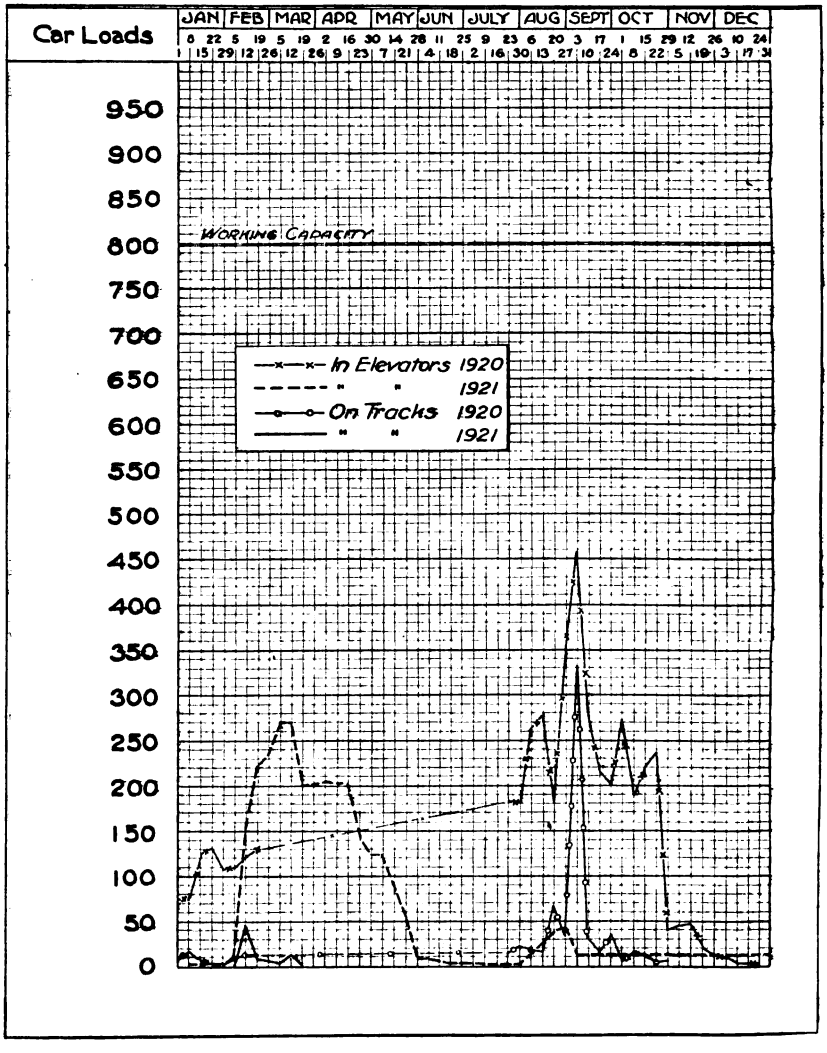
It may therefore be stated that the country price to the producer is based upon "track bids" at the country elevator or upon the terminal market price on grain "to arrive" or upon the "futures market" prevailing as of the close of the market on the day preceding. A "track bid" is for shipment from the country elevator

Digitized by Google

within a specified number of days, i. e., as agreed upon by the seller and the buyer at the time of the trading. A "to arrive" basis requires delivery at the terminal market usually within 20 days from the date of sale. The "futures market" is a hedge, and contem-

Chart A 50.

GRAIN SITUATION AT PORTS, 1920–21: NEWPORT NEWS.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

plates delivery at the terminal market during the month of the specified future.

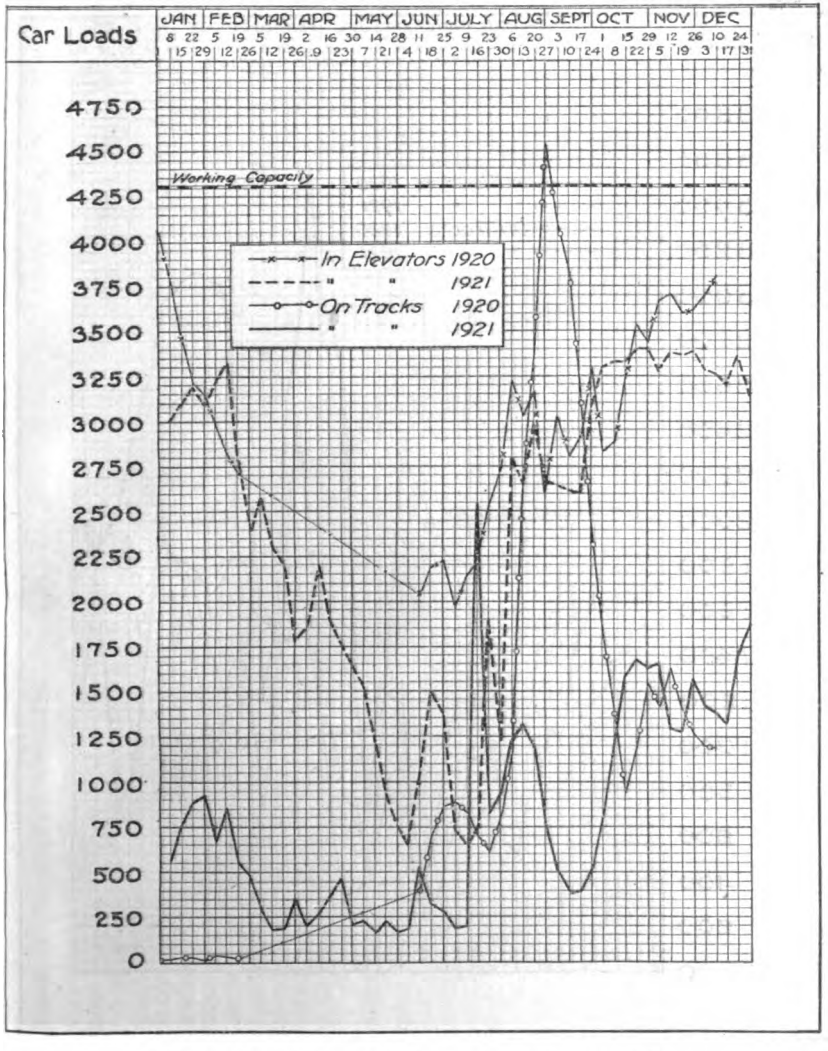
The gross buying margin at country elevators in the Northwest includes the commission charge at the terminal market for handling

Digitized by Google

and selling the grain on arrival, while in the Southwest the buying margin is based upon the net track price paid the country elevator operator after the deduction of a profit or commission. The margin for buying coarse grain generally is 1 to 2 cents under wheat; the

Chart A 51.

GRAIN SITUATION AT PORTS, 1920–21: NEW ORLEANS.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

lower margin seems to be influenced largely by the difference in value.

In considering the tables and charts showing the relationship of freight and elevator margins to the price received by the farmer at the local elevator and the price basis at the terminal, it should be

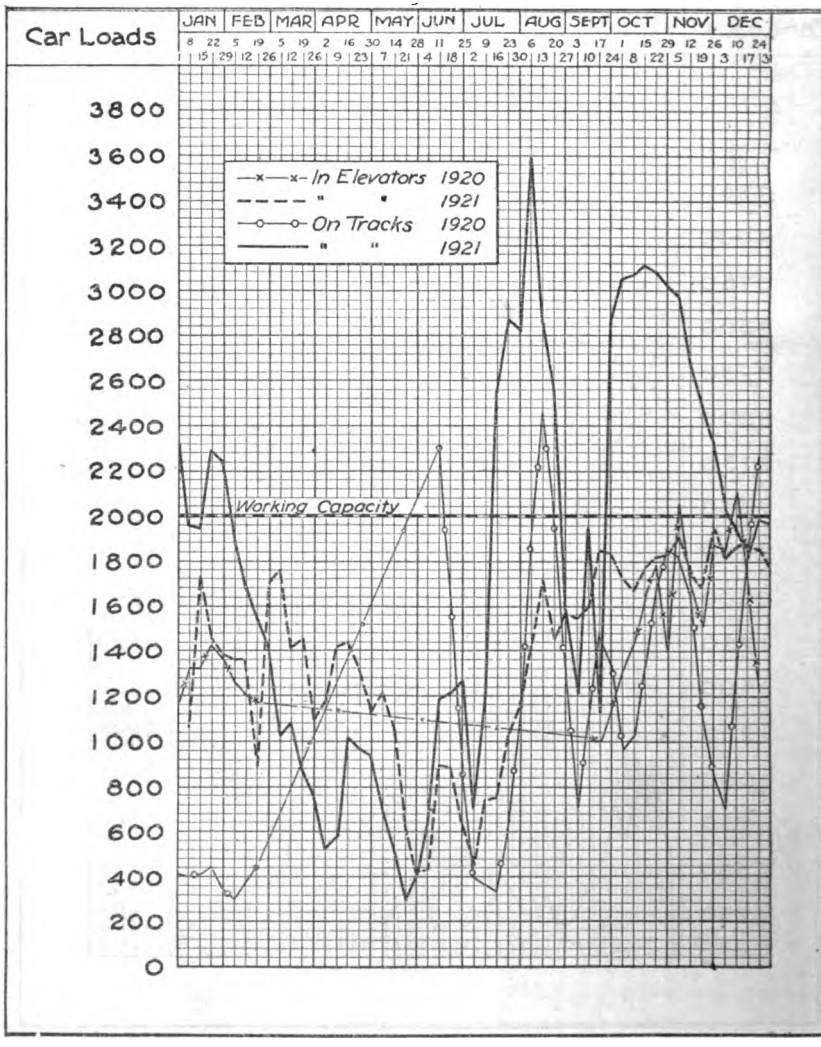
Digitized by Google

remembered that the elevator margins do not indicate either the cost of operation of the elevator or profits made by it.

The cost of operation is necessarily determined by the actual cost factors, while the profits are determined by the relationship of the

Chart A 52.

GRAIN SITUATION AT PORTS, 1920–21: GALVESTON.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

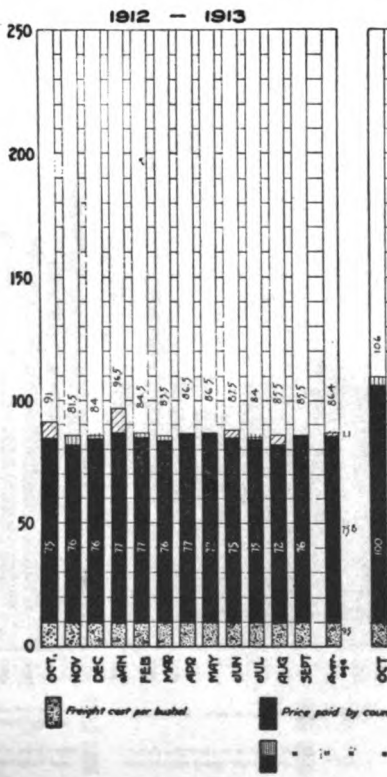
price paid for the grain at the local elevator and the price actually received at the terminal at a later date in comparison with the costs of operation.

Digitized by Google

Digitized by Google

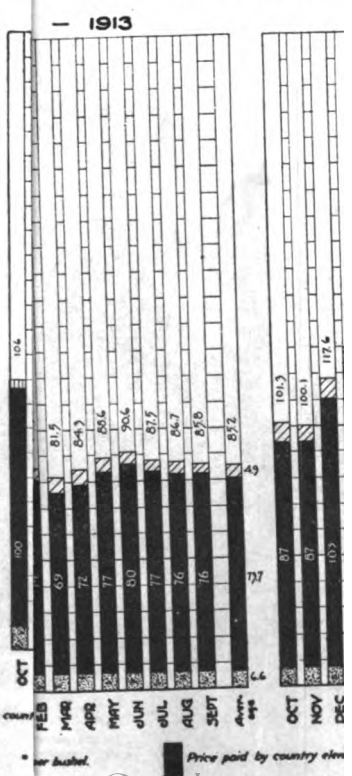
RELATION OF FREIGHT COSTS TO CO
AN

No. 2 Hard Winter



REIGHT COSTS TO COMMODITY
DEST

No. 2 Northern Spring Wheat



Digitized by Google

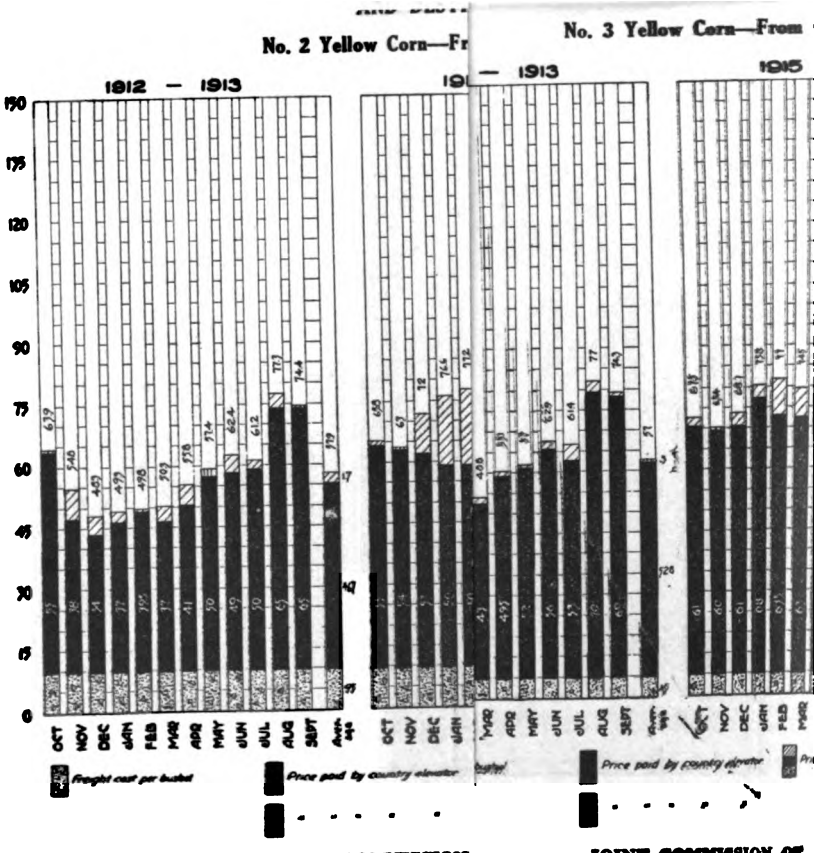
ODITY PR
DESTINAT

Wheat—Fr

1915

DN

Digitized by Google



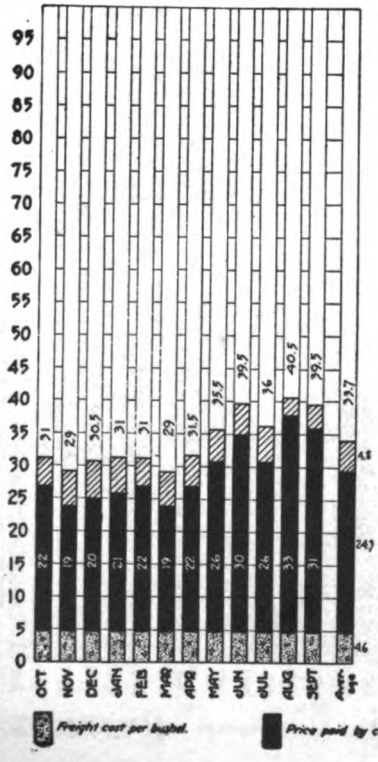
Digitized by Google

Digitized by Google

RELATION OF FREIGHT COSTS TO COMMO

No. 3 White Oats—

1912 — 1913



Digitized by Google

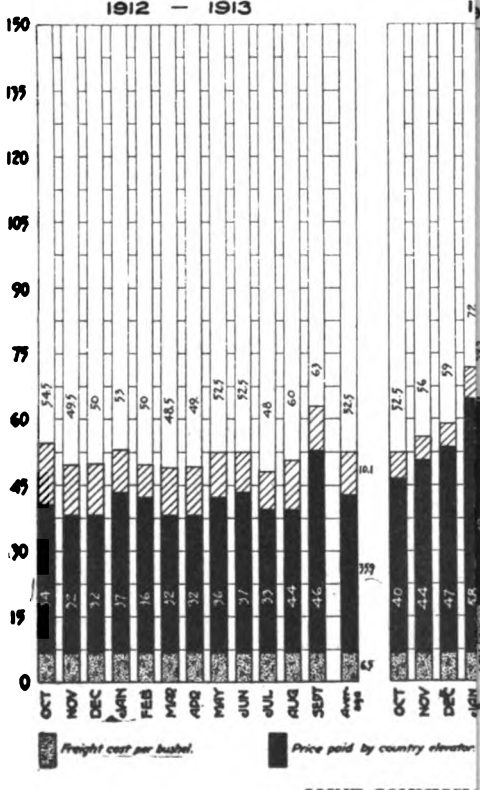
Digitized by Google

Digitized by Google

Digitized by Google

RELATION OF FREIGHT COSTS TO COMMODITY PRICES AND DESTINATION

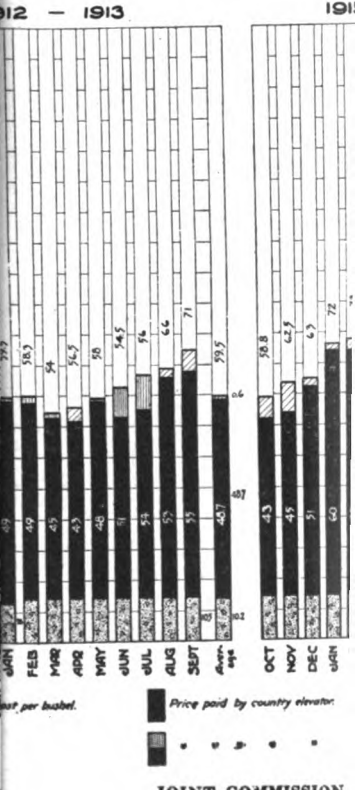
No. 4 Barley—From Canadian Points



JOINT COMMISSION

RELATION OF FREIGHT COSTS TO COMMODITY PRICES AND DESTINATION

Medium Barley—From



JOINT COMMISSION

Digitized by Google

ures presented in these tables, so far as they indicate the how only the buying relationship between the price at the and the price at the local elevator, and do not indicate osses incident to rising or declining markets, gains or losses ging operations, or gains or losses resulting from changes des upon which grain is purchased and sold.

A53 to A82 and Tables A66 and A67, inclusive, show the re- tween the price received by the producer, the price paid at nal elevator, the margin between the country elevator price erminal price on the same day, and the freight rate. These ere compiled by obtaining, through questionnaires covering mmodity and grade separately, the actual price paid for the ity at the country elevator, and the high and low price for the ity at the primary market from which the average at the market was computed, reducing the freight rate per hun- unds to the proportionate rate per bushel, and calculating rgin between the average primary market price and the elevator price plus freight, to obtain the selling margin be-. ountry elevator and primary market.

e A67 was compiled to show the relation of the freight rate on corn, wheat, and oats to the respective prices of these com- es at the country elevator and at the terminal for the crop years 3, 1915–16, and 1920–21, and also the relationships existing at ious markets. The percentage of the freight rate to the price h the country elevators and at the terminal varies with the t rate and the price. For instance, in the case of No. 4 barley eight rate in 1912–13 was 13.9 per cent of the price at the y elevator and 10.5 per cent of the price at terminal. An in- in the price of barley with a stationary freight rate resulted ucing the percentage of the freight rate to the average price country elevator to 9.8 per cent and at destination to 8 per cent. ffect of the decrease in the price of barley and the practically dent increase in the freight rate in 1920–21 is shown by an se of the ratio of freight to the price at the country elevator 2 per cent and to the price at the terminal to 16.1 per cent.

ilar relationships are indicated in other grades of barley and at markets. The percentage of the freight rate to the producer's at the country elevator reached as high as 45.4 per cent on ents from South Dakota to Chicago in 1920–21. The per- ge of the freight rate to the producer's price also tends to in- e with the length of haul from country elevators to the terminal. e effect of coincident decrease in the price of the commodity and crease in the price of transportation is still more apparent in able on corn, where the percentage of the freight rate to the ucer's price at the country elevator decreased from 23 per cent 912–13 to 22 per cent in 1915–16 and increased to 44 per cent 920–21 on shipments from seven typical points in South Dakota Minneapolis. The percentage of the freight rate on corn in 10 al points in Nebraska and South Dakota to Omaha, Nebr., de- ed from 12.1 per cent in 1913 to 9.7 in 1915–16 and rose to 28.1 cent in 1920–21; that is to say, in 1915–16 the freight represented per cent of the producer's price. In 1920–21 it represented 28.7 cent.

Digitized by Google

This situation is still more definitely indicated by shipments of corn from typical points in Illinois and Iowa to Baltimore, Md. Notwithstanding an increase in the price in 1920–21 as compared with 1912–13 at both the local elevators and the terminals, the percentage of the freight to the price at the local elevator increased from 25 per cent in 1912–13 to 51 in 1920–21 and the percentage of the freight rate to the price at the terminal from 19.1 to 33 per cent. The same general situation is shown with respect to oats.

In the case of wheat, however, somewhat different results are shown, owing to the fact that the price of wheat remained during 1920–21 substantially as much above the 1912–13 level as the price of transportation was above the 1912–13 level.

For example, in the case of shipments of No. 2 hard winter wheat from 17 typical points in South Dakota and Iowa to Chicago the average price to the producer in 1912–13 was 75.4 and in 1920–21 127.5 cents per bushel. The freight rate increased from 9.9 cents to 16.8 cents per bushel. The percentage of the freight rate to the price paid to the producer was 13.1 per cent in 1912–13 and 13.2 per cent in 1920–21.

These tables show in the most emphatic way the effect of an out-of-line relation between the price level of farm commodities and the price level of transportation and establish the necessity of freight rate reductions upon barley, corn, and oats if the prices of these commodities remain below the relative price for transportation.

CONCLUSIONS.

The conclusions of this commission are that the producers and consumers of grain and the products thereof should have:

(*a*) Rates adjusted so far as practicable to give the producer and consumer access to the widest field of distribution.

(*b*) Applied generally, the recent conclusion of the Interstate Commerce Commission, applying lower rates on coarse grain than on wheat, except where rates may be controlled or influenced by water competition or other factors not within the jurisdiction of said commission.

(*c*) Adequate and suitable box-car equipment.

COTTON.

Out of every 100 bales of commercial cotton produced in the world in 1920, 68 were produced in the United States; of the 68, more than 37 were grown in Texas, South Carolina, and Georgia. If two more States, Arkansas and Oklahoma, are added, more than one-half of the world's commercial crop is accounted for.

The consumption of American cotton may be divided into four parts, as shown in Tables A70 and A71; first, exports to Great Britain, continental Europe, Japan, and other countries, which together in the year ended July 31, 1921, took 47 per cent of the 1920 crop; second, New England mills, which took 12 per cent; southern mills 23 per cent; and mills in other States about 4½ per cent. The balance is accounted for by stocks on hand in the mills, warehouses, or compresses, and in the country. The actual stock on hand July 31, 1921, was about 6,534,000 bales in comparison with 3,563,000 in 1920 and a normal carry over of 2,500,000 bales.

Digitized by Google

TABLE A70.—*Cotton—Production and distribution of American cotton (in running bales, except foreign cotton consumed in United States, which is in equivalent 500-pound bales).*

Year ending July 31—	Cotton produced.[2]	Cotton exported.	Cotton consumption in United States.[1]			
			Total, United States.	Cotton growing States.	New England.	Other States.
1921	13,699,975	5,622,777	5,408,979	3,151,954	1,644,834	612,191
1920	11,920,625	7,087,487	6,762,207	3,714,403	2,418,828	628,976
1919	12,816,716	5,525,893	6,223,837	3,491,008	2,231,574	501,255
1918	12,344,664	4,641,023	7,685,329	4,414,052	2,642,934	628,343
1917	12,664,078	6,176,162	7,658,207	4,335,007	2,654,138	669,062
1916	12,012,813	6,168,140	7,278,529	3,977,130	2,627,150	674,249
1915	16,738,241	8,807,157	6,009,207	3,193,353	2,197,220	618,634
1914	14,613,964	9,521,881	5,884,733	3,023,415	2,251,041	610,277
1913	14,090,863	9,124,591	5,786,330	2,960,518	2,210,813	614,999
1912	16,109,349	11,070,251	5,367,583	2,712,223	2,108,360	547,000
1911	11,965,962	8,067,882	4,704,978	2,328,487	1,911,092	465,399
1910	10,386,209	6,413,416	4,798,953	2,292,333	2,016,386	490,234
1900	9,705,786	6,201,166	3,873,165	1,523,168	1,909,498	440,499
1890	7,472,511	4,943,600	2,518,409	538,895	1,502,177	477,337
1880	5,755,359	3,644,122	[3] 1,570,344	[3] 188,748	[3] 1,129,498	[3] 252,098

[1] Includes foreign cotton.
[2] Crop of preceding year.
[3] Cotton mills only.

TABLE A71.—*Summary of States leading in importance in the manufacture of cotton goods.*

State.	1919	1914	1899	Per cent of increase.		
				1919 over—		1914 over 1899.
				1914	1899	
Massachusetts	596,687,000	197,322,000	111,125,175	202.4	436.9	77.6
North Carolina	318,368,000	90,744,000	28,372,798	250.8	1,022.1	219.8
South Carolina	228,440,000	78,446,000	29,723,919	191.2	668.5	163.9
Georgia	192,188,000	59,982,000	18,544,910	220.4	936.3	223.4
Rhode Island	155,488,000	49,719,000	26,435,675	212.7	488.2	88.1
Connecticut	101,551,000	30,809,000	15,500,842	229.6	555.1	98.8
New Hampshire	85,986,000	35,793,000	42,998,249	140.2	99.9	[1] 16.8
Alabama	79,643,000	25,623,000	8,152,136	210.8	876.9	214.3
Pennsylvania	66,539,000	32,400,000	25,447,697	105.4	[1] 161.5	27.3
New Jersey	58,711,000	6,782,000	6,930,766	765.7	747.1	[1] 2.2

[1] Decrease.

These figures show the marked change in the distribution of cotton and in the cotton transportation problem. Prior to 1914 two bales out of three were exported, and the transportation problem was largely one of the haul to port, transfer to vessel, and ocean carriage to destination. New England in 1880 consumed about 1 bale in 5; to-day 1 in 8. Forty years ago the Southern States were spinning 1 bale in 30; to-day about 1 in 3. Such a realignment in the consumption of cotton has demanded an extension of adjustments of cotton rates and distributing methods; but in any case cotton must be sent to a mill ultimately, since practically none is consumed on the farm.

After the cotton has been picked it is first ginned to remove the cotton from the seed, and then shipped to a compress point. Freight charges to the compress point are collected when cotton is delivered to the compress. The cotton is there graded and "classed" into round lots of usually 100 bales of a particular grade or class, then com-

Digitized by Google

This situ
corn from t
withstandi
1912–13 at
of the fre
per cent i
rate to th
general
In th
shown
1920–
of tra
Fa
fro
ave
ce
co
m
j

102 TRANSPORTATION.

pressed or shipped to final destination. The freight charges from
the compress point to final destination are customarily based on the
use of the through rate from original point of shipment to final des-
tination by billing from the compress point at the balance of the
through rate. A small charge for compression is sometimes included
within the rate; in other cases it is added to the rate. Transporta-
tion of unginned cotton to the gin has been largely by "mule power,"
and at present an ever-increasing amount of ginned cotton i
being hauled over the highways to compress points, or mills o
larger markets to avoid payment of freight charges. There is a fur
ther advantage to the owner of the cotton in that he does not hav
cash tied up in freight payments until he is prepared to ship cotto
out.

The southern mills are now buying considerable quantities of cot
ton locally. The exact extent of this movement can not be deter
mined, but it is obviously of increasing importance as the consump
tion of cotton increases in the South.

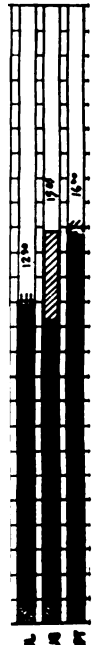
The cost of production in the South per pound of cotton ha
greatly increased since the advent of the boll weevil. Former max
mum crops totaled as high as 16,000,000 bales, but have now shrun
to about 11,000,000 bales, as an average of the past six crops, and
about 8,000,000 bales for the 1921 crop.

Table A72 shows the relation of freight costs to the value of th
cotton during 1913, 1916, and 1921. In 1913 the freight from statio
shown to Lowell, Mass., a typical New England consuming poin
ranged from 3.7 to 8.5 per cent of the producer's price; in 1921
ran from 7.4 to 12.8 per cent. To New Orleans, a short-haul poi
the increase has been from a range of 1.4 to 5.4 per cent to a ran
of 2.9 to 8.2 per cent. Other relationships are shown in the tab
which vary with the distance from market, competitive condition
price at market, and other factors which affect either the rates
the producer's price. The situation in regard to individual poin
of production is shown in Table A73 and Charts A83 to A8
inclusive.

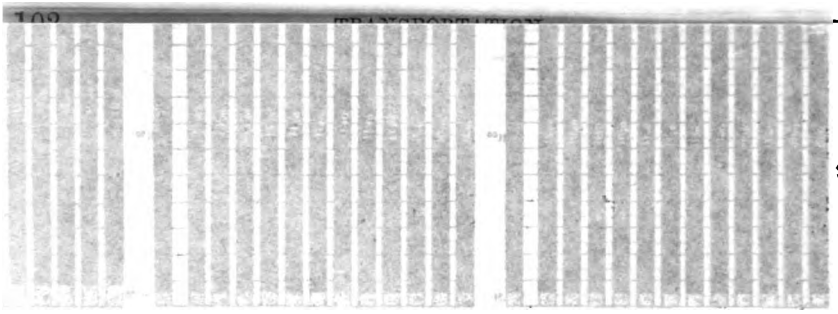
Table A74 gives the averages for each of the selected period
the price paid producer, the f. o. b. price and the cash price at des
nation, and the transportation cost incidental to the moveme
Typical producing points and typical markets were selected a
the averages were computed from prices secured at stated interv
throughout each of the periods covered. The effect of the increase
freight costs to the price paid the producer or to the price at des
nation if in fact it had any effect can not be measured. These f
ures, however, serve to indicate the general price levels and
relation of the freight costs to such prices.

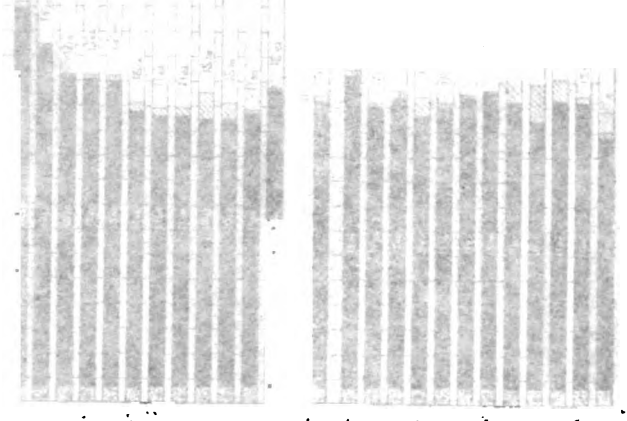
Subsequent to the tremendous inflation which sent cotton to a hi
price of 43 cents on the New York market, the price at both mark
and farms underwent the most severe deflation in the last 18 mon
of any farm product with the exception of wool. Chart A88 co
pares the course of the farm price and of the price at New Orlea
These prices were at the peak in April, 1920, except for a few da
in July, and fell off steadily, month by month, until late in 192
The slackening in the export demand, together with the general bu
ness depression in the United States and a temporary but hea

Digitized by Google



Digitized by Google





Digitized by Google

oversupply, combined to produce a price decline without parallel. The result was the collapse of buying power in the cotton-producing States.

Obviously, however, even at the lowest price of about $45 per bale of middling, a ton of cotton is worth $180. At present prices it is worth over $300 per ton; in other words, cotton to-day is worth more in proportion to its weight than any other of the major products of the farm except wool. Although cotton carries a higher freight rate per 100 pounds than most commodities, the collapse in price of this commodity could not have been seriously affected by this factor. The average rate per 100 pounds on cotton in April, 1920, according to the special study of the Interstate Commerce Commission, was 44.67 cents per 100 pounds, or slightly over 1.1 per cent of the maximum price reached. Although cotton is a basic commodity, and although equitable prices for cotton to the producer are essential to the prosperity of the South and of the whole Nation, yet the absorption of such amount from the market price in freight charges would not injure the farmer at the prices prevailing in the early part of 1920.

Cotton has been painfully and thoroughly deflated. More recently a considerable increase in price has added millions of dollars to the purchasing power in the South. Neither of these two price movements were seriously affected by freight rates.

Although the rates of freight now prevailing are but a small percentage of the value of cotton, they do under present conditions add to the burden of the cotton planter. Returns from cotton production for the past 40 years, with the exception of the years 1917, 1918, and 1919, afforded very meager returns to the growers and laborers of that industry. The production of cotton per acre now having shrunk to a figure approximately half of the former maximum production, the entire industry is faced with bankruptcy, and unless some means of greatly increasing the unit of production or the price to the grower can be found the industry must rapidly decline. Any increase in freight rates, therefore, does press with undue severity upon the cotton producer because of the high cost per bale of cotton production. The export of cotton has in the past been the principal factor in balancing the trade of the United States and it is greatly to the interest of the whole country to have profitable production and large exports of cotton continue.

HAY.

The total value on December 1, 1920, of the hay produced in the United States that year was $1,613,896,000, nearly three-fourths the total value of corn, the only crop of greater value. Although it did reach second place among our agricultural crops, the importance of hay has not been generally recognized. Proper rotation of crops is essential to the dairy industry. Hay, although a low-grade commodity, is essential in the production of milk, cream, butter, and cheese—high-grade and profitable products. Out of the total value of our crops hay represents more than one dollar in seven.

The production is well distributed through the United States, over 12 States having an average production for the last five years in

Digitized by Google

excess of 3,000,000 tons. Of this large production about 10 per cent is transported by rail. The balance is either consumed on the farm where grown, in the community, or trucked to a near-by market. The principal shipping centers for hay are Wisconsin, Kansas, Nebraska, Idaho, Arizona, and other States of the Middle West.

Hay when cut and cured in the field is still far from being ready for shipment. It must be stacked until it is thoroughly dry and can be safely baled. What is a safe moisture content has never been accurately determined, although the Department of Agriculture is now engaged in such a study. This work should be pushed to a rapid conclusion for the protection of producers, dealers, consumers, and the railroads.

The usual bale of hay weighs from 130 to 140 pounds. Some experiments have been made with hay compressed to 250 pounds per bale, but without much success. Any excess of moisture can not possibly evaporate, and the hay is subject to mold and rot under too great compression. Overpressure also breaks up the hay into small shreds, either reducing or destroying its commercial value.

Table A75 shows the receipts at the important markets. Kansas City is recognized as the leading hay market in the world. Kansas City and Cincinnati have in the past distributed large quantities of hay into the Southeast. As a result of an educational campaign on the part of the Government, States, county agents, and the railroads for greater rotation of crops and new methods of farming, the Southeast is now supplying itself to an ever-increasing degree with hay, so that the importance of these two markets as shipping points will ultimately diminish. This relocation of the hay-producing sections is causing material difficulties in the marketing of hay from the surplus regions, especially in the case of long hauls. There is, however, no doubt that the importance of diversified agriculture in the South can hardly be overemphasized, and each and all of these agencies should be commended for the work they have done. The importation of Canadian hay to the eastern markets has grown to considerable volume and now competes with the American product.

TABLE A75.—*Statement showing receipts and shipments of hay in tons at principal markets for year ended June 30, except as noted.*

Crop year.	1913–14	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20	1920–21
New York, received [1]	317,542	330,098	294,395	212,256	199,727	221,850	167,088	150,338
Chicago:								
Received [2]	369,032	325,095	273,181	237,932	352,730	287,031	225,050	149,801
Shipped	39,184	83,414	55,791	33,439	62,665	52,805	32,637	18,631
Kansas City:								
Received [3]	285,288	398,604	398,172	359,316	419,964	386,460	599,340	237,169
Shipped	78,756	67,608	73,668	138,432	222,912	143,040	258,084	153,648
Minneapolis, received [4]	38,280	45,513	45,376	35,652	39,126	28,457	22,601	23,015 / 2,020
San Francisco, received [5]	133,598	161,750	146,560	104,468	82,400	72,440	85,807	75,272
Cincinnati, received [6]	239,729	180,117	162,040	179,138	158,892	128,400	([7])	90,915

[1] Timothy.
[2] Timothy and prairie.
[3] Alfalfa.
[4] Timothy, prairie, and alfalfa.
[5] Alfalfa and grass.
[6] Timothy and clover; figures cover calendar year.
[7] Not available.

Digitized by Google

Hay has certain marked transportation characteristics. The average load is usually about 12 tons, as shown by the reports of the various railroads to the Interstate Commerce Commission. Although the load itself is light, the average load for all commodities being in excess of 27 tons, the value of the hay is also low. On January 1, 1922, the average price of hay to the producer was approximately $14.42 a ton baled, and a carload of hay was worth only $170 at the shipping point. On shipments of wild hay the net value is, of course, even less. An ordinary car of grain, carrying 1,300 bushels of wheat at 92.7 cents per bushel (average farm price December 1, 1921), is worth over $1,200, about seven times as much as the hay. Further, hay—unlike most commodities which move in carload quantities—requires team-track delivery. The cost of team-track delivery is one of the largest items of expense to the carriers in the transportation of hay, since these team tracks are located upon expensive property in the terminal markets. In addition, at some of the markets the railroads unload the hay into the warehouse, from which delivery is taken by the consignee.

The problem in the construction of the freight rates on this commodity is, therefore, to devise such rates as will, on the one hand, permit the traffic to move freely, and, on the other hand, afford adequate revenue to the carriers for the service performed. These two factors set the maximum and minimum limits of the rates.

Table A76 gives a summary of the hay movement for the year ending June 30, 1914, the latest year for which such figures are available. It shows that the revenue per ton-mile was then higher than the average for all commodities.

TABLE A76.—*Summary of hay movement, year ended June 30, 1914.*

	Tons.	Ton-miles.	Revenue.	Revenue per ton.	Revenue per ton-mile.	Average haul.
					Cents.	*Miles.*[1]
Eastern district	2,871,548	452,508,892	$3,919,106	$1.3648	0.866	157.58
Southern district	1,020,496	193,359,380	1,920,056	1.8815	.993	189.47
Western district	3,445,889	523,156,568	6,043,796	1.7539	1.155	151.82
Total United States	7,337,933	1,169,024,840	11,882,958	1.6194	1.016	159.31

[1] Single line.

Two facts stand out in the foregoing statements—the low value per ton of this bulky commodity and the widespread areas of production and consumption. Hay, therefore, is ordinarily short-haul business, with local distribution. There is, of course, considerable long-haul movement into dairy sections and in other special cases. The only complete study of the radius of distribution is contained in Table A76, showing the average haul to be 159.31 miles in 1914. The average haul on all traffic for the individual railroad was 146.04; for the railroads as a system that year it was 260.19 miles. In the Western Grain and Hay case (report of the Interstate Commerce Commission) it was testified that the average haul of hay in December, 1917, in the West was 172 miles; December, 1919, 170 miles; December, 1920, 188 miles. These figures, of course, are for individual lines. The

Digitized by Google

average haul of hay and straw from September, 1920, to April 30, 1921, on the principal western lines as a system was 242 miles.

Obviously the terminal expense must be distributed over a line movement much shorter than the average.

Representative conditions in regard to the movement of hay are shown in Tables A77 to A80, inclusive, and charts A89 to A92, inclusive. In making a selection of the points shown care was taken, so far as possible, to picture actual conditions. The figures from Lime Springs, Iowa, to St. Louis, Mo., and from Wausau, Wis., to Minneapolis are included merely to show the danger in drawing conclusions from prices and rates applicable on traffic which is not a typical or normal movement. These tabulations, together with the charts and figures in the following tables, are subject to the general comment made on page 17.

It is obvious from these tables and charts that the price to the producer has been reduced both by the freight rates and by the spread at the terminal markets. For example, on wild hay moving from Green Bay, Wis., to Chicago, Ill., the freight, $2.50, in 1913 was 40 per cent of the producer's price, $6.33. In 1920–21 the freight was 46 per cent, or an increase of 15 per cent. At the same time the difference between grower's price plus freight and price paid by consumer at the market was, respectively, 138 per cent and 53 per cent of the farmer's mean price, or a decrease of 62 per cent. From Bonair, Iowa, on No. 1 clover the freight was 32 per cent and 52 per cent, and the difference between grower's price plus freight and the price paid by consumer at the market was 46 per cent and 75 per cent in 1912–13 and 1920–21, respectively. Excluding the last two movements, Lime Springs and Wausau, shown in the last paragraph, the spreads in 1920–21 range as high as 941 per cent of 1912–13, with an average of nearly 150 per cent.

Freight rates on hay are now much higher than in 1912–13. In the Western Grain case, heard in August, 1921, before the Interstate Commerce Commission, it was shown that the rates to the markets of Chicago and Kansas City were then 173 and 182 per cent, respectively, of the 1913 rates. In the East the series of advances brings the rates up over 200 per cent of the 1913 level, and in the South about 156 per cent.

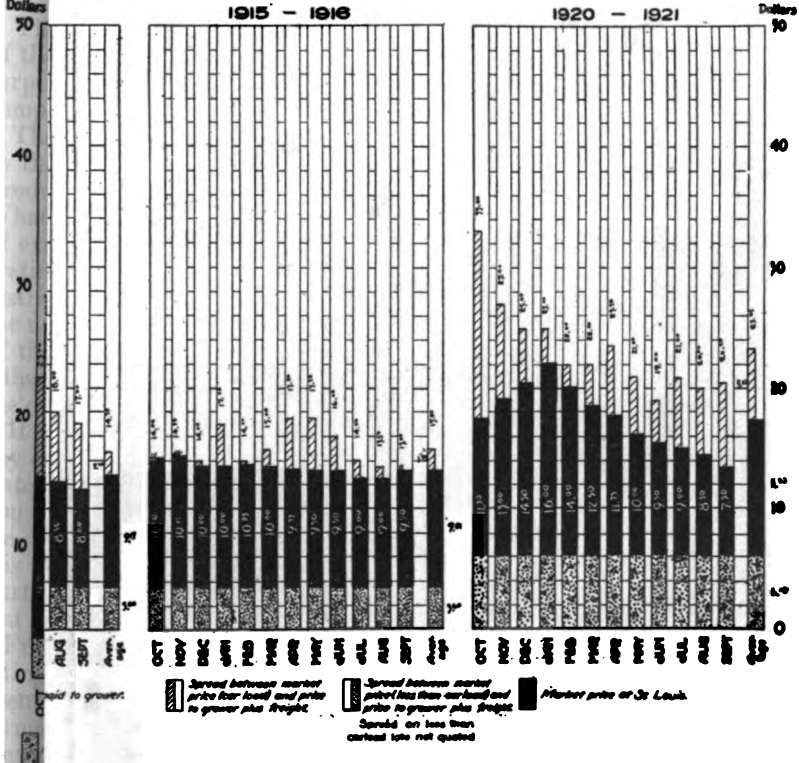
The effect of this increase in rates and in the marketing cost on the price received by the producer is shown in Tables A81 and A82. While the market prices are still 113 to 147 per cent of the 1913 level, the index of farm prices in the States shown slumps off steadily as one progresses westward from the consuming centers until it is 69 in Colorado. Deflation at the markets without a corresponding deflation in the cost of marketing has materially reduced the farmers' proceeds. The situation is, of course, more serious as the haul lengthens, due to the increase in the freight cost.

Digitized by Google

Chart A 92.

COSTS TO COMMODITY PRICES AT POINT OF ORIGIN AND DESTINATION.

y Hay—From Lime Springs, Iowa, to St. Louis, Mo.—437.6 miles.



OINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

Digitized by Google

TABLE A81.—*Comparison of market prices of hay, 1913 and 1921, average price per ton.*

[Index figure, 1913=100.]

Market.	1913	July-December, 1921.	1921
			Per cent.
No. 1 timothy:			
New York City	$21.01	$29.47	140.2
Cincinnati, Ohio	17.66	19.99	113.2
Chicago, Ill	15.82	23.36	147.6
St. Louis, Mo	17.83	22.29	125.0
No. 1 alfalfa, Kansas City, Mo	13.03	19.18	147.2

TABLE A82.—*Comparison of average farm prices of hay.*

[Index figure, 1913=100.]

State.	Dec. 1, 1913.	Dec. 1, 1921.	Dec. 1, 1921.
			Per cent.
New York	$15.30	$18.00	118
Ohio	12.80	11.50	90
Indiana	14.10	13.00	92
Illinois	14.10	13.50	96
Iowa	9.60	9.30	97
Nebraska	8.70	7.00	81
Colorado	10.00	6.90	69

The production of hay in the United States as a whole is in excess of the requirements in the districts in which it is produced, and the surplus, equal to 10 per cent, is sold in cities and other places for consumption to the extent that such markets will consume it.

The mere production of hay will not suffice. Unless there is added to the production a normal and regular process of exchange, the producer may find himself submerged by the costs of production. What is needed, not only for the prosperity of the hay producer but of every producer and consumer, is a continuing and genuine cooperation of all parties to the transaction, including producer, carrier, distributor, and consumer. The lack of transportation would mean the utter destruction of our present system of exchange. Prevention of the movement of commodities along the transportation machine, either by high marketing costs or by high freight rates, may disrupt the entire process of civilization.

It is therefore our conclusion that the present producer of surplus hay can not continue in the hay business unless his costs are reduced materially. The Interstate Commerce Commission ordered a reduction in the western rates, effective January 1, 1922, to the extent of the removal of one-half the advance of August 26, 1920, and this reduction in rates is not shown in these charts and tabulations. Further, the railroads have granted a voluntary reduction of 10 per cent in rates throughout the rest of the country.

Freight rates are still too high to permit the production and marketing of hay at a profit to the producer, and further reductions are essential before the production and marketing of hay will be upon a normal basis. The price of hay on the farm is now at or below the prewar level, and if that price is maintained both freight rates and marketing costs must likewise be readjusted to a similar level.

Digitized by Google

LIVE STOCK.

Production of meat animals and wool is centered in the Middle West and on the ranges; consumption in the East. Fattening and conditioning is therefore in the Middle West. The result is that in general the movement of live stock from one stage to another in production and to the packing houses is toward the East.

PRODUCTION OF LIVE STOCK.

The States of Montana, Idaho, Wyoming, Utah, Colorado, Arizona, Nevada, New Mexico, and Texas are the so-called range States upon which live stock is raised by pasture upon the various ranges. Eastern Kansas, eastern Nebraska, Iowa, Illinois, Indiana, Kentucky, and Ohio represent the corn-belt States, in which cattle may be either bred upon the farms or bought at some market as stockers or feeders and corn fattened until ready for sale. Kentucky, West Virginia, Virginia, and Tennessee are the blue-grass States, in which cattle are carried from breeding stock to finished beef.

Tables H9, H10, and H11 of Part I of this report indicate the number of head of the various kinds of live stock—cattle, hogs, and sheep—in the United States from 1890 to 1921.

Upon the basis of these tables, which, of course, include breeding stock and animals not yet available for immediate consumption, the relative number of head per thousand population has changed as follows: Cattle decreased 3 per cent, hogs increased 4 per cent, and sheep decreased 18 per cent from 1890 to 1920.

THE RAISING OF LIVE STOCK.

In many cases live stock is bred upon the farm and finished for market upon the same farm, especially in the corn-belt and blue-grass sections. In the range country steers may be bred in Texas or the mountain ranges and shipped into the rough forage sections including the Panhandle of Texas, western Oklahoma, western Kansas, eastern Colorado, eastern Wyoming, western Nebraska, and part of South Dakota. After a season in the rough forage country they are usually shipped into the Missouri River markets and Chicago and sold as stockers or feeders to the corn-belt farmers. After another season in the corn lots the stock is fattened and shipped to market as finished beef. In addition to this movement cattle are shipped direct from the range country into north Idaho, Montana, the Black Hills of South Dakota, and western North Dakota, where they run on grass ranges for one or two seasons and are then shipped direct to market. In the blue-grass section there is some movement of yearlings and 2-year olds from Tennessee into Kentucky and Virginia where they are finished for market.

The corn-belt farmers, particularly in Ohio, are now beginning to secure their stockers and feeders direct from the ranges as well as from the central markets after being put through a season of rough forage. At each stage in these movements any cattle in beef condition are sold to the packers for slaughter.

Digitized by Google

Although there is some movement of stock hogs from the States of North and South Dakota, Nebraska, and Kansas to the States east of the Missouri River, as a general rule the hogs are bred, fattened, and finally prepared for market upon the same farm. There is likewise a movement, which is considerably larger in volume, of stock sheep into the markets of the Central West.

While there has been an actual increase in the number of swine killed on the farm, the proportion is less than in 1909; and further, not only the actual number but the proportion of cattle, calves, sheep, and lambs slaughtered on the farm has decreased in comparison to the number slaughtered in packing houses.

The average farm price of hogs per head in 1913 was $9.86. On January 1, 1921, it was $12.99. Cattle were worth $26.36 per head in 1913 and $31.36 in 1921. Sheep were worth $3.94 per head in 1913 and $6.41 in 1921. These figures indicate that in every case there was an increase over 1913—hogs of 3.2 per cent, cattle of 18.9 per cent, and sheep of 62.7 per cent.

On January 1, 1922, the value of hogs per head had fallen to $10.06, or 20 cents over the 1913 price. Cattle had fallen to $23.78 per head, or 9.8 per cent under the 1913 price. Sheep had fallen to $4.80, or 21.8 per cent over the 1913 price.

It is particularly noticeable that the largest percentage of decrease under the 1913 price of cattle is concentrated in the range States. The greatest drop, namely 36.6 per cent, is for the State of Oklahoma. The following States have suffered a decrease of 15 per cent or more under the 1913 price: North Dakota, South Dakota, Nebraska, Kansas, Kentucky, Oklahoma, Montana, Wyoming, Colorado, and Idaho.

The increased costs of marketing of all kinds, including freight, commission, and other charges, have borne with the greatest severity upon the producer farthest from market.

The following States had an increase of 15 per cent or more over 1913 in average farm price of cattle: Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, North Carolina, Florida, Louisiana, and California.

Jersey City, Baltimore, Buffalo, Pittsburgh, Cleveland, Cincinnati, Nashville, Indianapolis, Louisville, Detroit, Chicago, East St. Louis, Milwaukee, St. Paul, Sioux City, Omaha, Kansas City, St. Joseph, Oklahoma City, Fort Worth, Denver, Ogden, and Salt Lake City are the principal markets for live stock.

Of the number of head of stock slaughtered under Federal inspection, hogs represent 53.9 per cent of the total; cattle, 36.1 per cent; sheep, 6.3 per cent; and calves, 3.7 per cent.

Sheep, cattle, and hogs are handled almost exclusively in stock cars of railroad and private ownership, the privately owned cars totaling about 4½ per cent of all stock cars in service. There is a very small local movement in box cars; but it is insignificant.

CARETAKERS.

Years ago, when the method of sale and of transportation had not been fully developed, the custom arose of granting free transportation to and from the market for a caretaker with the live stock.

Digitized by Google

There is unquestionably a real value to both the shipper and the public in having a responsible representative actually accompany the stock to see that they receive proper service, are kept on their feet, drenched, fed, and watered in transit; that they are also given proper treatment at destination, as well as to satisfy himself that the stock is properly handled at the stockyards until sold. Of course, the free transportation of the caretaker is justified only when the caretaker actually looks after the stock in transit. Abuse of this privilege should be discouraged in the interest of the live-stock shippers.

In the Southeast carriers undertake this responsibility of caring for stock, and free transportation is not accorded to caretakers. While many States have provided that free transportation in both directions should be accorded caretakers in charge of one car of live stock, the interstate rule has come to be that such transportation shall be provided in both directions only where the caretaker has two or more cars of live stock in his charge from the same shipper. The Interstate Commerce Commission has held that the requirement of at least two cars of live stock from one shipper for each caretaker's transportation is a reasonable one and that the State rule must be modified to conform to this opinion.

TRANSIT PRIVILEGES.

Live stock in transit is accorded numerous privileges so that there can be a through movement at a single rate. Live stock is often stopped for from 10 days to a year for grazing or fattening; sheep are also stopped for shearing or dipping. All kinds of live stock are stopped at the western markets to "try the market" and with the privilege of reshipment to another market.

When the shipments are consigned out of the Chicago market the ownership has usually changed. At the Missouri River markets and at St. Paul the owner has the privilege of stopping his car and offering the stock for sale. If he is not satisfied with the price offered, he may reload and ship to Chicago. At Chicago no specific transit privileges are published by the railroads, as there are no through rates on live stock from points west of Chicago to the East. Further, as a general rule, the owners from the West do not themselves take stock east of Chicago.

In cases where transit privileges are allowed, the through rates from point of origin to destination are applied. In addition in many cases a charge of from $7 to $15 or more is assessed by the railroads or charged by the Stock Yards Co. for feed, unloading and loading, and other incidental service. Transit privileges are allowed only where the tariffs of the carriers specifically permit.

SPEED AND SHRINKAGE.

Some study has been made of the speed with which the various railroads operate their live-stock trains. So long as the train stops at each local station to load an additional car of live stock, the time from the division point to the market will be comparatively longer

Digitized by Google

than for a solid train load from one market to another. On the other hand, when this pick-up service has been completed it is only reasonable to expect that the train will be handled at reasonable speed. Stock train schedules are faster than for the movement of ordinary freight, and are observed so far as possible.

Under the Federal law live stock moved in interstate commerce must not be confined within the cars in excess of 28 hours without unloading for feed, water, and rest, unless the owner of the stock signs a release permitting the stock to be confined for 36 hours. In no case shall the stock be confined more than 36 hours, regardless of the desires of either owner or transportation company, or more than 28 hours unless it can be fed and watered in the cars. A minimum of five hours rest is prescribed.

In the application of this law and in consideration of the speed made by the various live-stock trains, it is necessary to remember that the unloading is frequently delayed, due to congestion at the terminal yards. At Chicago the trunk lines from the West, such as the Chicago & North Western, Chicago, Burlington & Quincy, Chicago, Milwaukee & St. Paul, Chicago, Rock Island & Pacific, the Atchison, Topeka & Santa Fe, and others frequently bring in several train loads of live stock each on the same day. If for any reason more than 10 trains of 50 cars each arrive at the Union Stock Yards at the same time, some of the stock will necessarily be delayed while other stock is being unloaded. It therefore happens that while two hours is a reasonable and perhaps an average time for delivery of stock from the railroad terminals to the Union Stock Yards, three, four, or more hours is sometimes required for this movement. Therefore, though the railroad may have time enough from the last division point to reach the market, provided no unforeseen delays occur, it frequently refuses to take the chance because of the penalty which will be incurred for violation of the 28 hour law. This commission believes that in the administration of this law such discretion should be vested in the Department of Agriculture as will enable it to permit the carriers to be free from the penalties imposed in case the live stock is delayed by congestion at the stockyard.

Where the schedules are slow enough to cause an excessive amount of shrinkage the shippers and the carriers should endeavor to work out together a new schedule which will prevent this economic waste.

Table A83 shows the amount of shrinkage of cattle in transit for various lengths of time. This study was made by the Department of Agriculture, Bureau of Markets, which reports that the studies of hogs and sheep are not yet adequate to publish any results. While it is not possible to draw positive conclusions from this table in regard to the exact amount of increased shrinkage due to excess time in transit, it is evident that any undue amount of time required for the transportation of live stock does result in a loss of weight which, in turn, reduces the amount of money to the shipper and the amount of meat available for the consumer. There may be a higher price to the consumer or a lower price to the producer, or both, but certainly there is an economic loss.

Digitized by Google

TABLE A83.—*Shrinkage of beef cattle in transit.*

Time in transit.	Class of cattle.	Shrinkage.[1]
		Per cent.
Less than 24 hours	Range cows	3.58
Do	Mixed range cattle	2.14
Do	Mixed corn-fed cattle	3.91
Do	Mixed silage-fed cattle	2.05
Less than 36 hours	Range steers	3.65
From 24 to 36 hours	Range cows	3.46
Do	Mixed range cattle	6.37
Do	Mixed corn-fed cattle	4.11
Do	Mixed silage-fed cattle	3.57
From 30 to 48 hours	Cottonseed meal steers	5.40
From 36 to 72 hours	Range steers	5.40
Do	Range cows	4.84
Do	Mixed range cattle	3.88
Over 72 hours	Range steers	5.47
Do	Range cows	3.96
Do	Mixed range cattle	7.00
From 60 to 120 hours	Beet pulp cattle	5.40

[1] Based on live weight at point of origin and filled weight at destination.

In addition to the economic loss, there should also be mentioned the possibility of a loss in markets. If the train does not arrive until after the market time, the shipper must hold the stock over until the next market day, pay additional feed charges, and suffer additional shrinkage. While the percentage of such delay in arrivals to the total is unquestionably small, yet for the first 10 months of 1921 about 40 per cent of the entire amount of claims paid by the carriers on live stock was for delay. If the stock can be put on the market the day intended, these delay claim payments are largely avoidable. In order to protect both carrier and shipper from such loss and to prevent congestion at terminal markets, schedules must be and usually are so arranged that the stock is due to arrive from 10 o'clock in the evening until 5 o'clock or 6 o'clock next morning. This commission believes that the work which has been done at one of the principal markets along this line is commendable and that the schedules should be arranged accordingly at all markets so that stock may be unloaded promptly.

Terminal stockyards where stock is bought and sold are owned by private interests. These generally have a very large capacity and are served by all railroads at each terminal either directly or through a switching line. The railroads provide yards sufficient for local handling of stock at practically all stations and at feeding points for loading and unloading and rest.

OVERLOADING.

Another element in the transportation of live stock which causes considerable loss in transit is overcrowding. Table A84 shows that the dead and crippled animals received at 11 important stockyards amounted to about 1 animal to each 6 cars in 1919. The carriers' tariffs prescribe a definite minimum weight on each kind of live stock, and while these minimum weights vary in the different parts of the United States and also with the different kinds of animals, Table A85 represents the minimum weights generally applicable throughout a large portion of the United States. In the Southeast,

Digitized by Google

rates on live stock are usually stated in dollars per car rather than in cents per hundred pounds regardless of the method of rate publication, and the result is that the shipper tries to put into the car as much stock as he can in order to distribute the cost of freight over as many pounds of live stock as possible.

TABLE A84.—*Crippled and dead live stock.*

Market.	Cars received.		Cars forwarded.		Number crippled and dead.	
	Year 1919.	May, 1920.	Year 1919.	May, 1920.	Year 1919.	May, 1920.
Chicago	296,082	22,632	24,431	813	62,792	3,410
East St. Louis	110,960	7,309	33,357	1,562	29,300	2,377
Kansas City	159,748	10,242	56,886	2,595	19,307	1,265
St. Joseph	59,696	4,774	12,989	1,234	7,106	830
Oklahoma City	22,338	1,700	5,655	364	1,825	187
Wichita	13,199	1,069	5,367	340	916	109
South Omaha	135,771	8,806	47,108	2,498	17,693	1,303
Sioux City	68,421	5,491	28,598	2,169	10,685	692
South St. Paul	80,891	5,070	44,101	1,269	11,868	1,235
Denver	38,918	3,340	26,554	2,531	2,841	207
North Fort Worth	46,057	5,148	20,502	2,955	5,296	653
Total	1,032,081	75,581	305,538	18,330	169,629	12,268

TABLE A85.—*Minimum weights and safe loading weights of live stock.*

[A=number head required to make minimum; B=number head that can be safely loaded.]

CATTLE.

Car size.	Minimum.	Head.	Average weight (in pounds) per head.											
			300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
33	20,500	A	68	51	41	34	29	25	23	20	19	17	15	14
		B	50	41	36	34	29	27	26	23	21	19	17	16
36	22,000	A	73	55	44	36	31	27	24	22	20	18	17	16
		B	56	45	40	36	31	30	27	26	24	22	21	19
40	24,000	A	80	60	48	40	34	30	26	24	22	20	18	17
		B	62	50	44	40	37	33	30	27	25	23	21	20
44	26,000	A	86	65	52	43	37	32	29	26	24	22	20	19
		B	68	55	48	43	39	35	32	30	27	25	23	22

HOGS.

Car size.	Minimum.	Head.	Average weight (in pounds) per head.											
			100	125	150	175	200	225	250	275	300	325	350	400
33	16,000	A	160	128	106	91	80	71	64	58	53	50	46	40
		B	116	100	87	80	72	66	64	58	53	52	50	45
36	17,000	A	170	136	112	97	85	75	68	62	56	53	49	42
		B	127	110	95	88	78	70	68	62	60	57	54	48
40	19,000	A	190	152	126	108	95	84	76	69	63	58	54	47
		B	140	122	106	98	87	78	75	69	66	63	60	53
44	21,000	A	210	168	140	120	105	93	84	76	70	64	60	52
		B	154	134	116	108	95	86	84	76	72	69	66	58

Digitized by Google

TABLE A85.—*Minimum weights and safe loading weights of live stock*—Continued.

HORSES.

Car size.	Minimum.	Head.	Average weight (in pounds) per head.											
			700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800
36	28,000	A	33	29	26	23	21	19	18	17	16	15	14	13
		B	29	27	25	24	23	22	21	19	18	18	17	17
40	25,760	A	36	32	28	26	24	21	20	18	17	16	15	14
		B	32	30	28	27	26	24	23	21	20	19	19	18

SHEEP.

Car size.	Minimum.	Head.	Average weight (in pounds) per head.					
			50	75	100	125	150	180
[1] 36	12,000	A	240	160	120	90	80	67
		B	150	125	110	95	85	75
[2] 36	22,000	A	440	294	220	176	147	125
		B	300	250	220	190	170	150
[1] 40	14,000	A	280	186	140	112	94	78
		B	165	140	125	105	95	85
[2] 40	24,000	A	480	320	240	191	160	135
		B	330	280	250	210	190	170

For 44-foot car add 15 head per deck up to 100 pounds; after that weight add 10 per deck. In case of 33-foot car, reduce (from 36-foot figures) 8 head per deck up to 100 pounds; after that weight reduce 6 head per deck. These tables are recommended for general guidance. Actual inspection of shipment is necessary to determine whether or not car is overloaded.

[1] Single deck.

[2] Double deck.

The table shows the number of head of live stock at each weight which can be safely loaded into cars of different lengths. Using a 36-foot car as the standard, on all kinds of cattle averaging less than 600 pounds each it is not safe to load the minimum weight required. On hogs the dividing line seems to come at 250 pounds per hog. Horses of 1,000 pounds each or more can be safely loaded to the minimum weight. Sheep, single deck, can not be loaded to the minimum weight safely unless the average is in excess of 100 pounds, or double deck unless the average is at least 100 pounds.

It is not expected that these tables can be used as an absolute rule. They are, on the contrary, a general guide derived from the experience of carriers and shippers in handling live stock. This commission recommends that shippers and carriers confer to avoid loss due to overloading.

BRUISES, ETC.

One of the most serious questions in the marketing of live stock is the loss due to bruising of animals in loading or unloading in transit or at the yards. Very strong effort is now being made by the packers, the live-stock exchanges, the railroads, the Department of Agriculture, and the farm organizations to reduce this loss to a minimum. The use of prod poles, clubs, and similar instruments for driving the animals is being discouraged on account of the loss in meat they produce.

Digitized by Google

MARKETING COSTS.

As shown in Table A86, the Interstate Commerce Commission made a study of the average rate per hundred pounds on live stock and also of the average haul for four years from 1911 to 1914, inclusive. According to this statement, the average rate for the United States for the year ended June 30, 1914, was 13.4 cents per 100 pounds for an average haul of 212.2 miles.

TABLE A86.—*Average freight rates per hundred pounds and average haul of live stock.*

Year.	Eastern district.		Southern district.		Western district.		United States.	
	Rate.	Haul.	Rate.	Haul.	Rate.	Haul.	Rate.	Haul.
	Cents.	*Miles.*	*Cents.*	*Miles.*	*Cents.*	*Miles.*	*Cents.*	*Miles.*
1911	10.0	252.9	12.0	161.6	15.3	221.2	13.6	224.1
1912	10.4	256.3	11.9	152.3	14.8	210.8	13.3	216.8
1913	9.6	228.3	11.9	138.1	14.6	209.1	13.1	208.8
1914	10.0	237.0	12.5	141.2	14.8	210.4	13.4	212.2

In May, 1921, it was shown that the rates and average haul on live stock were then as follows:

	Average haul.	Rate in cents per 100 pounds.
	Miles.	
Eastern district	186	17.3
Southern district	220	23.0
Western district	216	25.95

In view of the reduction since made and referred to on page 116 the rate to-day for the country as a whole is probably in the neighborhood of 20 cents per hundred pounds.

RATES.

The general statement which introduces the subject of the economic relationship of transportation to agriculture includes a history of a considerable number of rates on live stock. Live stock received the same advances in rates as other commodities, subject to one exception, namely, that under General Order No. 28 the rates were not advanced a straight 25 per cent, but were rather advanced 25 per cent subject to a maximum advance of 7 cents per hundred pounds. On August 26, 1920, the live stock rates throughout the country were again advanced 40 per cent in the eastern territory, 25 per cent in the South and Pacific coast territory, and 35 per cent in the territory from Chicago to the Rocky Mountains. Prior to these two general advances, rates in the East had been advanced 5 per cent in 1914, were readjusted in 1917 in accordance with the decision of the Interstate Commerce Commission in the eastern live-stock case, and then advanced 15 per cent.

On September 20, 1920, rates on live stock in the territory west of the Mississippi River and Chicago, when in excess of 50 cents, were,

Digitized by Google

at the suggestion of the Interstate Commerce Commission, reduced 20 per cent, subject to the provision that no rate so reduced should be less than 50 cents. On January 1, 1922, the carriers reduced by 10 per cent the live-stock rates which had not been previously reduced since September 1, 1920.

The net result of these changes was to increase the rates in the East 110 per cent over the 1913 rates, in the South about 40 per cent, and in the West about 45 per cent. Prior to 1918 live-stock rates in the Southeast had not been changed since 1891; and rates in the East are still less, mile for mile, than in other parts of the country.

The stocker and feeder movement, which runs up into the millions of heads of live stock, is one of the most important developments in connection with the breeding and fattening of live stock for market. Stockers and feeders are cattle which have been shipped from the grass ranges to be finished for market in the corn lands of the Middle West. The rate on such stockers and feeders out of the markets west of Chicago is usually 75 per cent of the fat-stock rate. This rate is predicated on the fact that on such movements the carrier is to receive later an outbound movement of the fattened animals.

MIXED CARLOADS.

One of the recent developments in the transportation of live stock is the tremendous growth of mixed carload shipments. The tables referred to in connection with the distribution of the stock show that large quantities are now being shipped in mixed cars. For 1918 out of the total of 1,813,306 cars reported 113,769, or more than 6 per cent of the total, were mixed cars. The first six months of 1919 the number had increased to over 7 per cent. At a hearing held in Chicago early in 1921 by the Interstate Commerce Commission it was shown that more than 24 per cent of the cars received at the Union Stock Yards during the first eight months in 1920 consisted of mixed shipments. As a general proposition, it may be stated that the farther east one goes the greater is the proportion of mixed carload shipments. In the West, however, the proportion is much less. Sioux City shows for 1920 only 5 per cent.

The development of the mixed carload shipment is the result of the growth of the cooperative associations and also the result of the operation of smaller farms. It is evident that a farmer must be operating a good sized farm if he can finish off and have ready for market at the same time a straight carload of cattle consisting of from 20 to 25 head, a straight carload of hogs consisting of from 50 to 75 head, or of sheep consisting of from 130 to 270 head.

The mixed carload shipment unquestionably is of value to the producer in permitting him to put stock upon the market when it is ready, and also, if he can make two periods coincide, when the market is favorable.

Charges for mixed carload shipments are made at the highest rate applicable on any kind of stock in the car, subject to the highest minimum weight. The propriety of this method of making charges has been brought before the Interstate Commerce Commission.

In the shipments of mixed carloads of live stock safe transportation requires that each species of stock shall be separated from other

Digitized by Google

species by a substantial partition. As a rule these partitions are made of any kind of lumber or other articles available. Evidence has been presented of the use of such articles as small trees, bed springs, slats, etc. The lumber is nailed to the uprights in the car and must be removed not only when the car reaches destination but also at any time when it is stopped for feed, water, or rest. At the present time some partitions are being put forward in the form of a gate which can be fastened in the car without the use of spikes or screws. These standard partitions do not injure the car and do prevent stock from getting from one side to the other, and are accordingly a benefit to the shipper and the carrier by reducing the losses.

In connection with this discussion of mixed carload shipments two further facts should be remembered.

(1) That the removal of these partitions is one factor in delaying the unloading of stock at terminals.

(2) In some parts of the country live-stock shipping associations do not offer mixed carloads of stock to the railroad. If a few cattle and a few hogs are to be shipped arrangements are made before these are offered for shipment so that enough other cattle or hogs are offered to make a straight carload of one or the other. This method of shipping avoids the difficulties of physical handling and higher freight charges applied on mixed carloads, although it may at times somewhat delay the shipment of the stock. We recommend the extension of this method of shipping to the careful consideration of all cooperative live-stock shipping associations.

MOTOR-TRUCK TRANSPORTATION.

Transportation of live stock by motor truck from the near-by points is steadily becoming a larger feature of the receipts at some of the principal markets.

This method of transportation is becoming increasingly popular with the producers. The limiting factor seems to be the amount of space available at the yards for unloading purposes. At many of the stockyards few or no facilities are provided, so that the stock are often injured when unloaded. If proper unloading chutes can be furnished at all the markets, motor-truck transportation can and will continue to spread.

The cost of transportation by motor truck is considerably higher than by freight train. At St. Joseph, Mo., the usual rate from points 30 to 50 miles away is 50 cents per 100 pounds, with a slight increase from points more distant. From near-by points the rate is usually so much per load, without a definite permanent basis. The advantage to the farmer, which offsets the high rate, is the speed with which the stock can be handled from the farm to the stockyard and the possibility of shipping in smaller quantities than by rail.

MARKET PRICES.

The value of cattle at Chicago declined from $83.10 per head in 1913 to $74.21 in 1921, or to 89 per cent of the prewar value. Calves increased in price from $13.33 per head in 1913 to $13.72 in 1921.

Digitized by Google

Hogs increased from $19.31 in 1913 to $20.98 per head in 1921. Sheep declined from $7.88 per head in 1913 to $7.07 in 1921.

Tables A87 and A88 show the results of a study made at the various live-stock markets to determine the actual proceeds on live stock returned to the shipper, together with the costs of freight, feed, yardage, and commission. An attempt was made to secure figures in regard to shipments of the same species and grade of stock from a given point to a market, as near as possible, on the third Tuesday of each month during the years shown. The record of that movement was taken from the actual sales of commission firms and reduced to a per 100 pound basis. The recent freight-rate reductions effective September 20, 1921, and January 1, 1922, are not included in these compilations.

As a general rule the commission was unable to secure comparable data of this sort from points far distant from the market. These points, as a rule, did not ship at sufficiently regular intervals throughout the year to enable these data to be compiled. Accordingly the effect of the relationship of freight charges to the net return to the shipper is minimized in these charts.

In the description of live-stock production there was a brief statement of the fact that a large proportion of our live stock is bred in one place, rough fed in another, corn fattened in still another. It is, therefore, evident that the total amount of freight charges which are a part of the cost of the live stock and putting it on the market is not represented by a chart portraying a single movement except in those cases where the live stock has but a single movement from producer to packer. What is the exact relationship between the number of the stock with only a single ride with those of two or more trips is a question which can not be satisfactorily answered; each is an important movement.

Unless the price at the market where the live stock is finally sold for slaughter is sufficient to keep in business those who carry the live stock for one or more seasons, and unless profitable use can be made of the areas in this country which are devoted to this business, these producers and shippers of live stock must go out of business. The total costs to the marginal producer must be adjusted to the price received.

In view of the adverse conditions surrounding its industry, the Interstate Commerce Commission and the railroads made the reductions in rates previously referred to.

Farm prices of live stock in 1921 were below the 1913 level. If higher prices can not be realized, it is obviously necessary that all of the cost in marketing and distribution must be stabilized at approximately the 1913 level. If, as now appears to be the case, prices of live stock are going to find their level somewhat higher than in 1913, freight, commission charges, feed, yardage, and other costs may also find a level corresponding to that of the prices of live stock.

PRODUCTS OF ANIMALS.

The following deals with live-stock products of the farms whose value in 1919 was found by the Bureau of the Census to be $2,667,072,273, of which dairy products, valued at $1,481,462,091, are slightly

Digitized by Google

over 55 per cent; eggs and chickens, slightly over 39 per cent; the balance being wool, mohair, honey, and wax.

No special consideration has been given to the subject of honey and wax, and mohair has been considered the same as wool, since the transportation conditions surrounding it and the rates for its movement are the same.

WOOL.

In the United States the production of wool is partly a by-product of the production of sheep for meat and is partly a straight product of the raising of sheep. There is still in Ohio and some of the other Eastern States a small number of the merino sheep, but these have been largely crossed with other breeds or replaced by other breeds which produce a better general-purpose animal. Sheep on the ordinary farms of the East and Middle West are kept partly to clean up the fence rows and odd corners and to consume unsalable roughage.

On ranges sheep are, of course, kept primarily for their mutton and wool value. In production for 1921 the State of Wyoming leads with 21,500,000 pounds; Texas second with 18,000,000 pounds; Ohio, the largest wool-producing Eastern State, is eighth in rank with 13,200,000 pounds.

The United States does not produce enough wool to supply its own needs, and accordingly there is a large volume of imports, principally through the ports of Boston, New York, and Philadelphia. American wool, whether produced in the Middle West or on the ranges, is usually marketed along the Atlantic seaboard, with Boston as the principal market. There has been in the last few months a very material effort to build up the market at Chicago with some considerable success. There are terminal difficulties at Boston, added to the fact that there is usually a back haul to the mills, while Chicago, on the other hand, has a unified switching district and can forward wool direct to the mills without additional charges for out-of-line movement. These factors have materially aided in the effort to change the distributing center. Whether the wool moves through Boston or Chicago as the point of sale, the ultimate destination of a large proportion is the Atlantic seaboard, primarily New England.

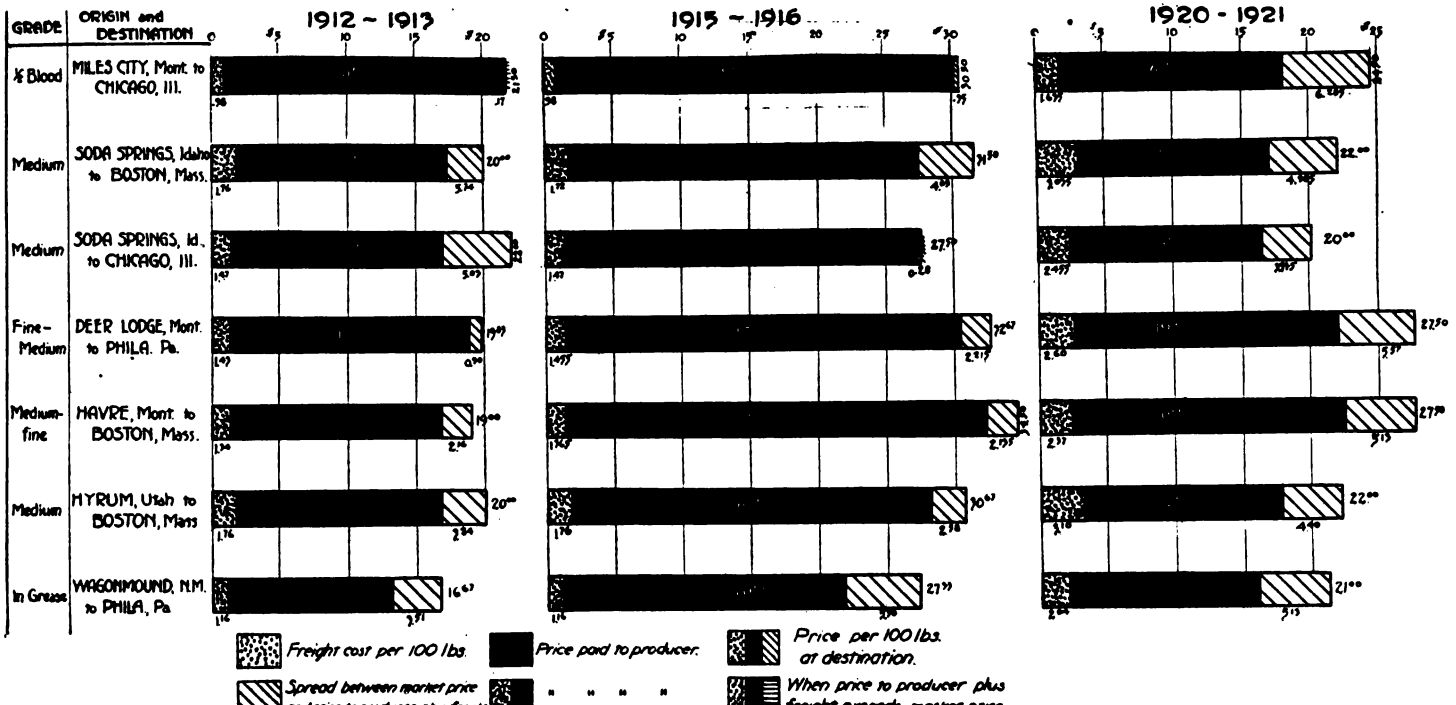
The average price paid producers for unwashed wool in the United States during 1913 was 16.7 cents, and in 1921, 16.9 cents, indicating that the price of wool was then practically at the prewar level.

Table A89, together with chart A93, indicates the relationship of freight rates from some typical points of origin in the West to various markets. Freight rates have been increased until in the West they run from 10 to 25 per cent of the price received by the producer, and in the East nearly 4 per cent. For example, from Miles City, Mont., to Chicago, as shown on the chart, the average price received by the producer was $16.50 per hundredweight, while the freight rate was $1.63½, or almost 10 per cent. From Soda Springs, Idaho, to Boston, Mass., the freight rate was $3.03½, while the net return to the producer was $14.00, or more than 22 per cent of the price received by the producer was consumed in freight charges. In contrast to these figures the average price received by the producer in Ohio was 23.4 cents, while the freight rate from Columbus, Ohio, a typical point, to Boston, was 86 cents per hundredweight, or prac-

Digitized by Google

Chart A 93.

WOOL—RELATION OF FREIGHT COSTS TO COMMODITY PRICES AT POINT OF ORIGIN AND DESTINATION: 1912–13, 1915–16, 1920–21 (YEARLY AVERAGES).


GRADE
ORIGIN and DESTINATION
1912 - 1913
1915 - 1916
1920 - 1921
¼ Blood
MILES CITY, Mont. to CHICAGO, Ill.
Medium
SODA SPRINGS, Idaho to BOSTON, Mass.
Medium
SODA SPRINGS, Id., to CHICAGO, Ill.
Fine-Medium
DEER LODGE, Mont. to PHILA. Pa.
Medium-fine
HAVRE, Mont. to BOSTON, Mass.
Medium
MYRUM, Utah to BOSTON, Mass
In Grease
WAGONMOUND, N.M. to PHILA, Pa
Freight cost per 100 lbs.
Price paid to producer.
Price per 100 lbs. at destination.
Spread between market price and price to producer plus freight
When price to producer plus freight exceeds market price.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

tically 4 per cent of the price. The 10 per cent reduction in rates which was granted by the carriers as of January 1, 1922, would, in the second case, if reflected back in its entirety to the producer, and if there were no fluctuations in the market price, increase the return to the producer at Soda Springs more than 30 cents per hundredweight, or 0.3 cent per pound.

TABLE A89.—*Wool.*

Point of destination (market).	Point of origin.	1912–13					
		Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
						Point of origin.	Destination.
1	2	4	5	6 (4+5)	7	8 (5÷4)	9 (5÷7)
Philadelphia, Pa....	Gallup, N. Mex.....	$12.50	$1.38	$13.88	$16.67	11.0	8.3
	Wagonmound, N. Mex.	12.00	1.16	13.16	16.67	9.7	7.0
Boston, Mass.....	Hyrum, Utah.....	15.60	1.76	16.76	20.00	11.7	8.8
	Cascade, Mont.....	14.00	1.44	15.44	19.00	10.2	7.6
	Havre, Mont.....	15.50	1.34	16.89	19.00	8.6	7.1
	Nashua, Mont.....	15.50	1.22	16.72	19.00	7.9	6.4
Philadelphia, Pa....	Deer Lodge, Mont...	17.50	1.43	18.93	19.83	8.2	7.2
Boston, Mass.....	Soda Springs, Idaho.	15.50	1.76	17.26	20.00	11.3	8.8
Chicago, Ill.....	.....do.....	15.50	1.47	16.97	22.00	9.5	6.7
Philadelphia, Pa...	.....do.....	15.50	1.70	17.20	20.00	11.0	8.5
St. Louis, Mo.....	.....do.....	15.50	1.42	16.92	22.00	9.2	6.5
Chicago, Ill.....	Baker, Mont.....	17.00	.91	17.91	21.50	5.4	4.2
	Miles City, Mont.....	20.69	.98	21.67	21.50	4.7	4.6

Point of destination (market).	Point of origin.	1915–16					
		Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
						Point of origin.	Destination.
		10	11	12(10+11)	13	14(11÷10)	15(11÷13)
Philadelphia, Pa....	Gallup, N. Mex.....	$26.00	$1.38	$27.38	$27.33	5.3	5.0
	Wagonmound, N. Mex.	20.67	1.16	21.83	27.33	5.6	4.2
Boston, Mass.....	Hyrum, Utah.....	26.33	1.76	28.09	30.67	6.7	5.7
	Cascade, Mont.....	31.00	1.465	32.465	34.50	4.7	4.2
	Havre, Mont.....	31.00	1.365	32.365	34.50	4.4	4.0
	Nashua, Mont.....	28.50	1.245	29.745	34.50	4.4	3.6
Philadelphia, Pa....	Deer Lodge, Mont...	29.00	1.455	30.455	32.67	5.0	4.5
Boston, Mass.....	Soda Springs, Idaho.	25.75	1.72	27.47	31.50	6.7	5.5
Chicago, Ill.....	.....do.....	25.75	1.47	27.22	27.50	5.7	5.3
Philadelphia, Pa....	.....do.....	25.75	1.66	27.41	31.50	6.4	5.3
St. Louis, Mo.....	.....do.....	25.75	1.40	27.15	27.50	5.4	5.1
Chicago, Ill.....	Baker, Mont.....	28.00	.91	28.91	29.50	3.3	3.1
	Miles City, Mont....	29.17	.98	30.15	30.50	3.4	3.2

Digitized by Google

TABLE A89.—*Wool*—Continued.

Point of destination (market).	Point of origin.	1920–21					
		Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
						Point of origin.	Destination.
		16	17	18(16+17)	19	20(17÷16)	21(17÷19)
Philadelphia, Pa....	Gallup, N. Mex.....	$9.00	$2.30	$11.30	$21.00	25.7	11.0
	Wagonmound, N. Mex.	13.83	2.04	15.87	21.00	14.8	9.7
Boston, Mass.....	Hyrum, Utah.....	14.50	3.10	17.60	22.00	21.4	14.1
	Cascade, Mont.....	18.00	2.535	20.535	27.50	14.1	9.2
	Havre, Mont.....	20.00	2.37	22.37	27.50	11.8	8.6
	Nashua, Mont.....	20.00	2.17	22.17	27.50	10.8	7.9
Philadelphia, Pa....	Deer Lodge, Mont...	19.33	2.60	21.93	27.50	13.4	9.5
Boston, Mass.....	Soda Springs, Idaho.	14.00	3.035	17.035	22.00	22.1	13.8
Chicago, Ill.....	.....do.....	14.00	2.455	16.455	20.00	17.9	12.3
Philadelphia, Pa....	.....do.....	14.00	2.935	16.935	22.00	21.4	13.3
St. Louis, Mo.....	.....do.....	14.00	2.335	16.335	20.00	17.0	11.7
Chicago, Ill.....	Baker, Mont.....	15.63	1.52	17.15	24.25	9.7	6.3
	Miles City, Mont.....	16.58	1.635	18.215	24.50	9.9	6.7

Digitized by Google

TABLE A90.—*Statement showing the average price paid producer, the average market prices, and the average transportation cost from typical producing points to typical markets.*

WOOL.

Point of destination (market).	Point of origin.	Year.	Price per hundredweight paid producer, point of origin.	Freight rate to destination, per hundredweight.	F. o. b. price, destination, per hundredweight.	Cash price, destination, per hundredweight.	Per cent freight rate to price at—		Short-line mileage.
							Point of origin.	Destination.	
1	2	3	4	5	6 (4+5)	7	8 (5÷4)	9 (5÷7)	10
Boston, Mass.:									
Medium fine	9 typical points in Montana	1912-13	$16.40	$1.36	$17.76	$18.80	8.3	7.2	2,355.2
		1915-16	29.30	1.38	30.68	34.40	4.7	4.0	2,355.2
		1920-21	19.70	2.39	22.09	27.40	12.1	8.7	2,355.2
In grease	5 typical points in New Mexico	1912-13	12.10	1.34	13.44	17.00	11.1	7.9	2,331.0
		1915-16	22.00	1.34	24.34	25.80	5.8	5.2	2,331.0
		1920-21	13.50	2.25	15.75	20.50	16.7	11.0	2,331.0
Chicago, Ill.:									
Medium fine	3 typical points in Montana	1912-13	18.20	1.20	19.40	16.60	6.6	7.2	1,421.7
		1915-16	28.00	1.20	29.20	32.10	4.3	3.7	1,421.7
		1920-21	19.80	2.00	21.80	25.10	10.1	8.0	1,421.7
Half blood	2 typical points in Montana	1912-13	18.80	.95	19.75	21.50	5.1	4.9	1,059.0
		1915-16	28.60	.95	29.55	30.00	3.3	3.2	1,059.0
		1920-21	16.10	1.58	17.68	24.40	9.8	6.5	1,059.0
Philadelphia:									
Medium fine	3 typical points in Montana	1912-13	18.20	1.37	19.57	19.80	7.5	6.9	2,238.9
		1915-16	28.00	1.40	29.40	32.70	5.0	4.3	2,238.9
		1920-21	19.80	2.48	22.28	27.50	12.5	9.0	2,238.9
Half blood	2 typical points in Montana	1912-13	18.80	1.13	19.93	20.00	6.0	5.6	1,876.2
		1915-16	28.60	1.16	29.76	32.20	4.1	3.6	1,876.2
		1920-21	16.10	2.06	18.16	27.40	12.8	7.5	1,876.2
In grease	5 typical points in New Mexico	1912-13	12.30	1.28	13.58	16.70	10.4	7.7	2,116.2
		1915-16	23.00	1.28	24.28	26.60	5.6	4.8	2,116.2
		1920-21	13.50	2.16	15.66	20.70	16.0	10.4	2,116.2
St. Louis, Mo.:									
First grade	1 typical point in Arizona	1912-13	15.00	1.73	16.73	32.90	11.5	5.2	1,656.0
		1915-16	14.50	1.73	16.23	44.50	11.9	3.9	1,656.0
		1920-21	19.70	2.86	22.56	29.30	14.5	9.7	1,656.0
In grease	5 typical points in New Mexico	1912-13	12.30	1.05	13.35	16.90	8.5	6.2	1,143.0
		1915-16	23.00	1.05	24.05	33.00	4.6	3.2	1,143.0
		1920-21	13.50	1.76	15.26	15.10	13.0	11.7	1,143.0
San Francisco, first grade	1 typical pount in Arizona	1912-13	15.00	1.42	16.42	17.70	9.5	8.0	919.0
		1915-16	14.50	1.14	15.64	17.00	7.9	6.7	919.0
		1920-21	19.70	1.78	21.48	23.70	9.0	7.5	919.0

Digitized by Google

Table A90 gives the average price paid producer, the average market prices, and the average transportation costs from typical producing points to typical markets. These averages were computed from price figures secured at stated intervals during each month of the periods selected.

A study of these tables and charts shows also that the difference between prices paid in the market for wool and the return to the producer plus freight is unduly large. In 1913 this spread in the case of the seven movements shown on the chart varied from $0.17 to $5.74. In 1920–21 this spread ranged from a low of $3.54½ to a high of $6.28½. It is difficult to believe that the costs of marketing have increased in any such ratio.

Very largely as a result of this situation producers of wool throughout the United States have organized cooperative associations, in which their wool is now being pooled, graded, and sold direct to the eastern factories. In the past this spread has been accounted for, at least to some extent, by the sale of the wool on the farm or range to a speculator, who in turn might sell to another speculator, so that the wool in some cases passed through 5 or 6, or even 8 or 10, hands before it finally reached the consumer. If the wool were properly graded in conformity with established standards, the price to the producer would be greater and the spread between the producer's price and the mill price would be materially reduced. The opportunities for reducing this spread are large, due to old unscientific and disorderly methods of marketing and utter lack of grading.

It is therefore concluded that the price of wool to the producer has been depressed somewhat by the freight rates primarily by disorderly and unscientific marketing. Each of these factors has tended to produce a wider spread than is desirable between the producers' and the consumers' dollar.

Cooperative selling agencies have just been legalized by Congress, and we believe that these steps taken toward cooperative grading and selling will bring the producer closer to the consumer.

MEATS.

The 1920 census reports the slaughtering and meat-packing industry as the largest single manufacturing industry in value of output in the United States. There are a large number of companies engaged in this business, and they are widely scattered over the United States. There was a total of 1,279 establishments reported in 1914. The 1920 census figures of packing plants are not yet available, but 1,300 are reported for 1919, a slight increase over 1914.

Another indication of the number of plants engaged in this business will be found in the figures of the Department of Agriculture on the number of Government-inspected slaughtering plants. These number 895 establishments, located in 163 cities. These figures are for June 1, 1920.

About two-thirds of the meat supply of the United States is raised west of the Mississippi, and about two-thirds of the population is east

Digitized by Google

of the Mississippi River. This situation makes necessary the long distance and national distribution of meats. In other words, there are two types of meat distribution needed in the United States, one local and the other long distance. Each requires a different type of organization. Small plants and corresponding equipment are necessary for local distribution. Large plants with branch houses or distributing agents and refrigerator cars are necessary for national distribution.

Figures compiled by the Bureau of Animal Industry of the Department of Agriculture indicate the number of animals slaughtered in Government-inspected plants, on farms, and by local slaughter.

A general view of the growth of the industry from 1914 to 1919 is given by the figures compiled from the United States census of manufactures for these two years.

MARKETING PACKING-HOUSE PRODUCTS.

Refrigerator cars.—The founders of the modern packing industry were the originators of meat refrigerator cars. This was the origin of packer-owned refrigerator cars, which to-day total over 15,000 refrigerator cars owned by the large packing companies, and a total of 21,517 refrigerator cars owned by all packing companies.

Fresh meat is easily contaminated, and it is necessary to keep cars for meat clean and fresh. The packer maintains that by owning his own cars he is able to give them more careful and personal attention in this respect than would be possible if they were owned by another party who did not have the same personal interest in them.

Refrigerator cars constitute one of the most important pieces of physical equipment in the marketing of packing-house products, because whether meats are sold through branch houses or by car routes, or through jobbers or wholesalers, they must be transported from packing plants to destination under refrigeration. The refrigerator car, therefore, is a highly essential link in this chain of distribution.

Branch houses.—During the growth of the larger packing companies—approximately 40 years—they have developed their own selling agencies in the more densely settled parts of the country in the form of branch houses. Branch houses are used by the largest packing companies and to a less extent also by smaller companies.

Through these branch houses the companies owning them distribute their products at wholesale to retail dealers. They handle fresh and cured meats of all kinds, meat specialties, poultry, eggs, butter, cheese, oleomargarine, lard shortening, cooking and salad oils, and soap.

The larger packers operate over 1,100 branch houses, the majority in the eastern United States, but spread quite generally over the country. They are located either in large cities or else in medium-size cities having a number of near-by towns which can be conveniently supplied by express or automobile trucks.

A small amount of processing is done in some branch houses distant from the packers' plants, such as smoking hams and bacon, cooking hams, and manufacturing sausage.

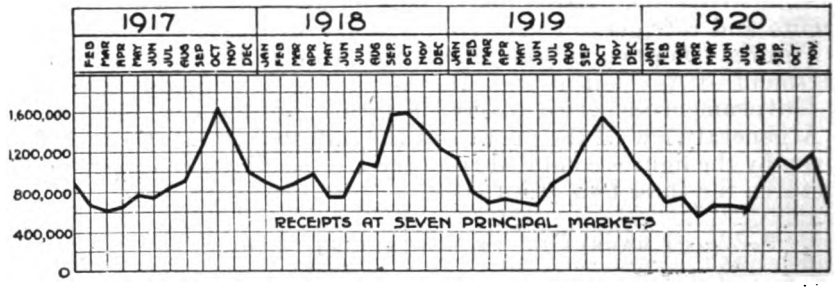
Carloads of products are shipped directly from a company's packing plants to its branch houses. There is daily communication be-

Digitized by Google

tween the head offices of a company and its branch houses, so that the packer is in close touch with the market.

Chart A 94.

SEASONAL INFLUENCE OF RECEIPTS OF CATTLE, MONTHLY, 1917–1920.



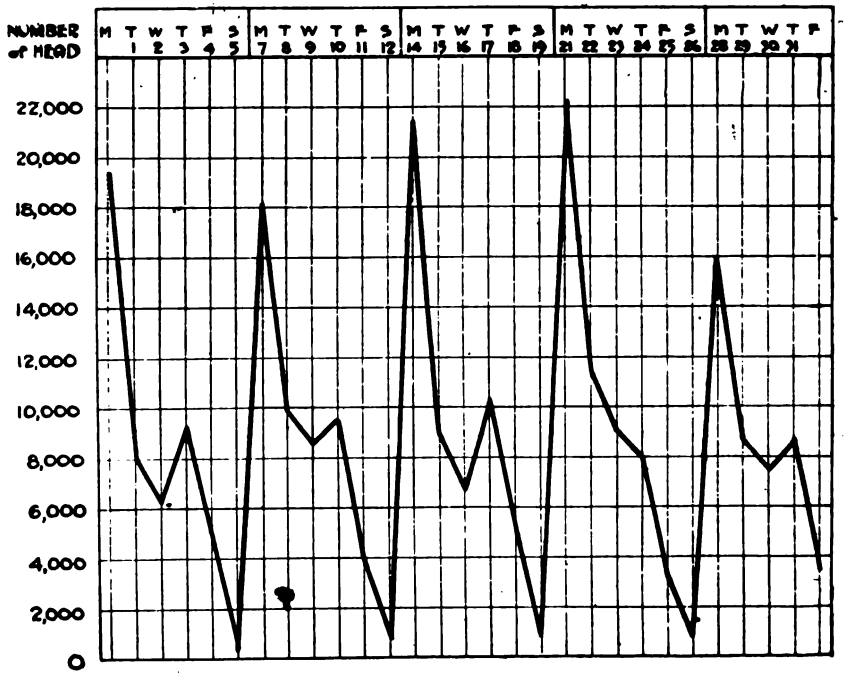
JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Car routes.—Practically all the larger packing companies operate systems known as car routes. The packer's salesman takes orders

Chart A 95.

DAILY RECEIPTS OF CATTLE AT CHICAGO, MARCH, 1921.

[Data from Chicago Drover's Journal.]



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

from retailers along a certain line of railroad. His orders are forwarded back to the plant and a refrigerator car takes the products to their destination.

Digitized by Google

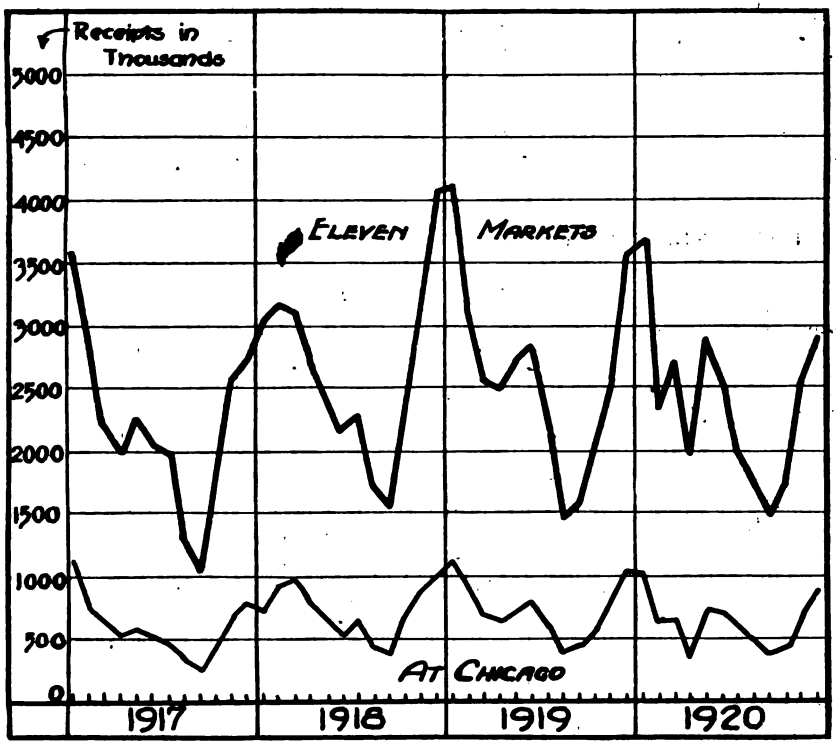
This method of distribution is designed to supply smaller towns in those parts of the country contiguous to packing-plant centers. This method of distribution began about 1890, shortly after branch houses had begun to be established. Now there are said to be over 1,500 distinct car routes operated by packers in the Middle West and South.

Selling to retailers.—Retail dealers get their supplies of meat either from small local packing plants or else from larger packing

Chart A 96.

RECEIPTS OF HOGS, MONTHLY, 1917–1921.

[Data from Chicago Drover's Journal.]



JOINT COMMISSION OF AGRICUTURAL INQUIRY.

companies at more distant points. If they buy from the local packing companies or from the branch houses of other packing companies, they are able to go to the company's coolers and select their products. If the retailer receives his products by route car, he must place his order with the packing company's salesman.

It is a common practice for the packer to deliver the retailer's purchases from the local plant or branch house or route car to the retailer's shop, though this does not seem to be a universal practice.

Commission men.—Many of the smaller packing companies, and to a slight extent the larger companies, also sell to retailers through brokers or to regular wholesalers of meat. An extremely small per-

Digitized by Google

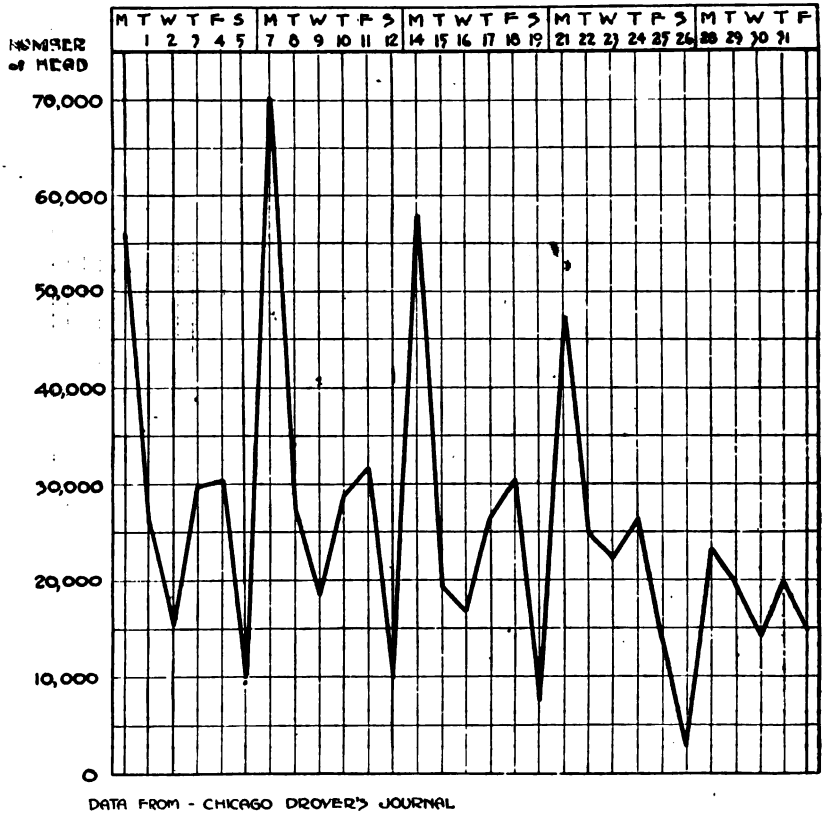
centage of the large packer's business is handled on this basis, most of it being done through his own branch houses and car routes.

There are certain specialized classes of jobbers of meats. For example, the so-called peddler jobber has a special trade, made up, perhaps, of restaurants or outlying retail shops and delicatessen stores, to which he regularly caters. Knowing their needs, he selects the proper grades of meats from the wholesaler or packer and delivers them to the purchasers.

Chart A 97.

DAILY RECEIPTS OF HOGS AT CHICAGO, MARCH, 1921.

[Data from Chicago Drover's Journal.]



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

There are also hotel-supply companies which buy from packing companies and specialize on such trade as hotels, restaurants, clubs, dining cars, boats, and institutions.

Wholesale prices.—There are many factors affecting the wholesale prices of beef. It has already been pointed out that the demand is variable. On the other hand, the supply of beef depends upon the number of beef cattle shipped to market. This, too, fluctuates. If

Digitized by Google

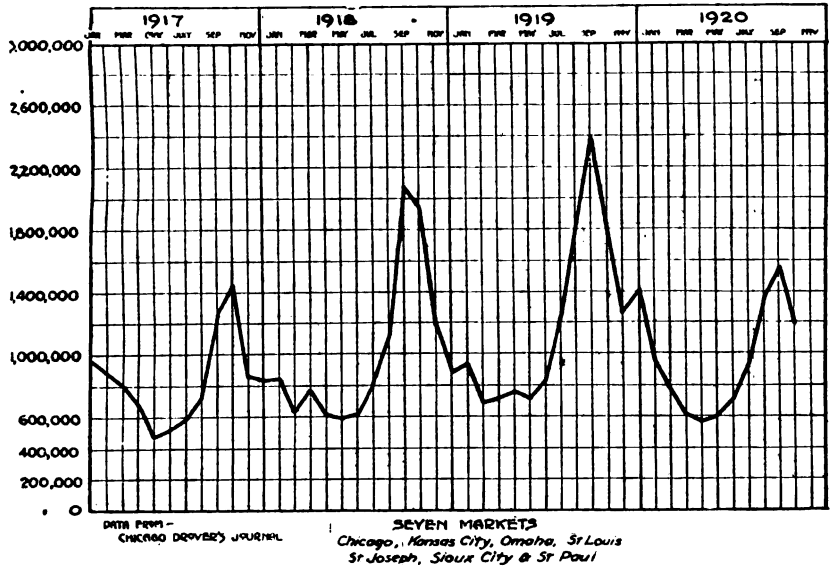
receipts of cattle, for example, are heavy, it means that within a few days much more beef must be moved into the market, because it is perishable and can not be held any length of time. This irregularity of live-stock receipts is shown in charts A94 to A99, inclusive.

Beef.—On the average only about 55 per cent of the weight of the live steer emerges as dressed beef. That is the principal reason for the spread in price between the price of live cattle and the price of the resulting beef.

Chart A 98.

RECEIPTS OF SHEEP AT SEVEN PRINCIPAL MARKETS, MONTHLY, 1917–1920.

Seven Markets: Chicago, Kansas City, Omaha, St. Louis, St. Joseph, Sioux City, and St. Paul.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Another important factor which appreciably affects the relationship between the price of beef and the price of cattle is the market value of such by-products as hides, oleo oil, etc.

Briefly stated, a live steer is worth to a packer what he can obtain for the beef plus what he can obtain for the by-products, minus his cost of operation. So if the value of hides and other by-products declines the packer will try to buy live stock at a lower price because it is worth that much less to him, even though the price of beef remains the same. This widens the spread between live and dressed prices. On the other hand, a rise in the value of by-products should cause an increase in the price of the live animals and in this case narrows the spread between cattle and beef prices.

In much the same way that the spread between beef and cattle prices is affected by changes in by-product values it is also affected by changes in the packer's cost of doing business.

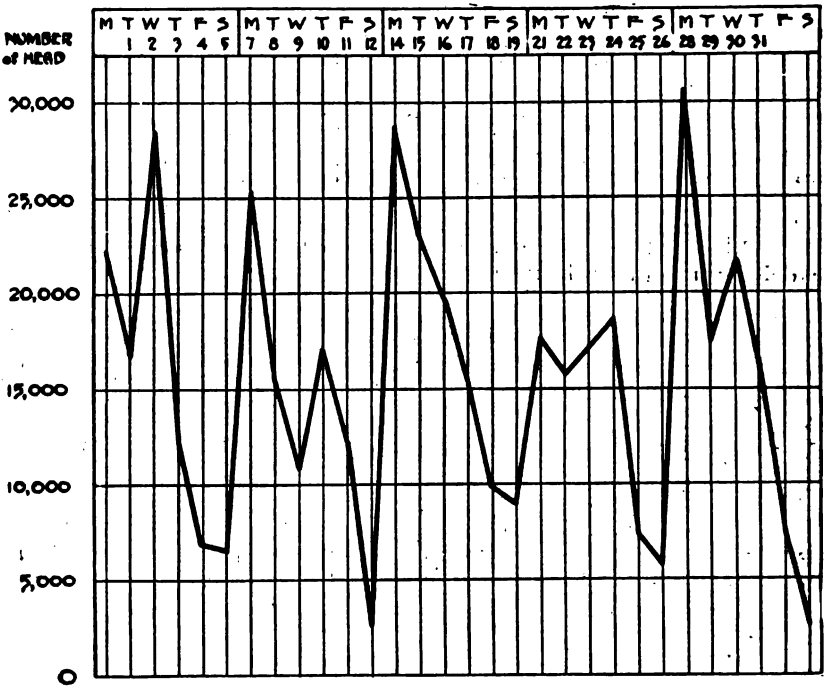
Digitized by Google

Labor.—Packing-house expenses consist principally of labor. Wages in the packing industry rose rapidly during and immediately following the war. Since that time two cuts in packing-house wages have been made by the large packers, one of 12½ per cent in March, 1921, and the other an average of about 10 per cent on November 28, 1921. Wages in the industry are still far above the prewar level and

Chart A 99.

DAILY RECEIPTS OF SHEEP AT CHICAGO, MARCH, 1921.

[Data from Chicago Drover's Journal.]



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

are one of the most influential factors in causing a wide spread between prices of live stock and the prices of dressed meats.

Freight expenses.—Changes in the freight rates on dressed beef are shown in chart A100 and in Table A91. This table shows a total increase in the amount of freight on a 1,000-pound steer from Des Moines, Iowa, to Chicago, and on the products of the steer from Chicago to New York City $3.41. The percentage increase in the rates on dressed meat from Chicago to New York has amounted to 108 per cent.

Digitized by Google

TABLE A91.—*Changes in freight on cattle and beef, 1921, compared to 1914.*

	Weight unpacked.	Tare.		Total weight shipped.	1914		Feb. 15, 1922.		Increase.	Per cent.
		Per cent.	Amount.		Rate per hundredweight.	Amount of freight.	Rate per hundredweight.	Amount of freight.		
			Lbs.	*Lbs.*						
On a 1,000-pound steer from Des Moines, Iowa, to Chicago (carload rates)	.....	.....	.....	1,000	$0.221	$2.21	$0.335	$3.35	$1.14	52
On products from a 1,000-pound steer from Chicago to New York:										
Edible products—										
Beef	544	.....	.....	544.0	.45	2.450	.965	5.253	2.80	114
Other meats	36	10	3.6	39.6	.45	.178	.965	.382	.....	.....
Oleo oil and stearine	21	5	1.0	22.0	.30	.066	.63	.139	.....	.....
Nonedible products—										
Hide	59	.....	.....	59.0	.30	.177	.63	.372	.....	.....
Blood and tankage	15	.....	.....	115.0	.25	.037	.525	.079	.....	.....
Bones	13	.....	.....	13.0	.25	.032	.525	.068	.....	.....
Casings	6	10	.6	6.6	.30	.020	.63	.042	.....	.....
Tallow	5	5	.2	5.2	.30	.016	.63	.033	.....	.....
Miscellaneous	5	.....	.....	5.0	.30	.015	.63	.031	.....	.....
Shrinkage	296	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	1,000	.....	5.4	709.4	.....	2.99	.....	6.40	3.41	114
SUMMARY.										
Beef	544	.....	.....	544.0	.....	2.45	.....	5.25	2.80	114
Other products	160	3.4	5.4	165.4	.....	.54	1.15	1.15	.61	113
Shrinkage	296	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1,000	.....	5.4	709.4	.....	2.99	.....	6.40	3.41	114

DAIRY PRODUCTS.

The dairy industry is one of first magnitude both to the farmer and the consumer. It is a source of continuous current income to the producer. To the consumer dairy products constitute a necessity of life. When to whole milk is added butter, one of the principal fat foods, and cheese, of our leading protein foods, the value of milk becomes clear. The total value of dairy products in the United States was reported by the Bureau of Census to be $1,481,462,091, while the products of agriculture, including dairy products, is stated to be $22,907,085,705. In other words, about 15 cents out of every $1 worth of production on the farm consists of dairy products.

Milk production is in highly localized sections, although there are large numbers of milch cows in every State. The markets for milk depend upon the form in which it is used, whether as whole milk, butter, cheese, or condensed milk.

WHOLE MILK.

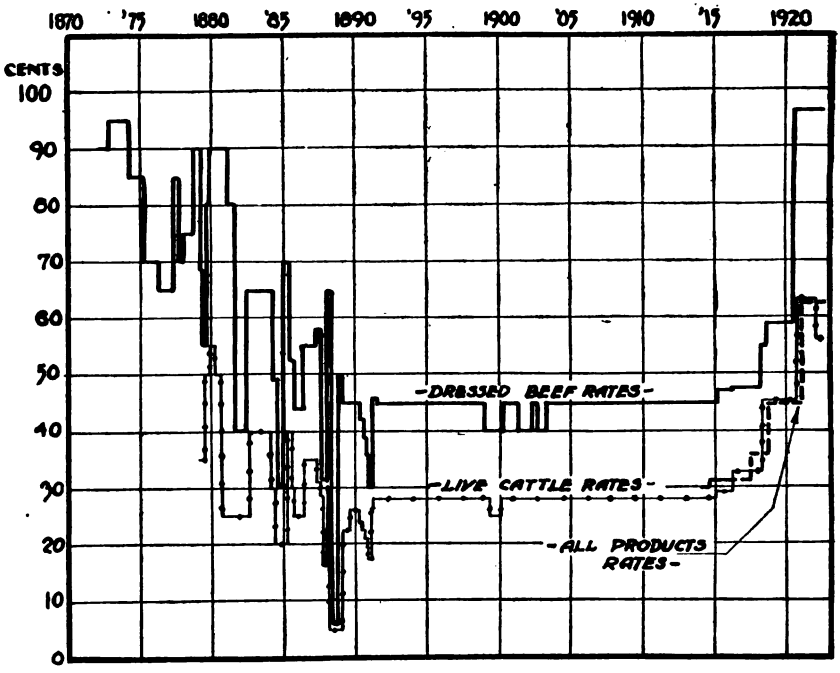
Whole milk, due to its highly perishable nature, must be produced within a reasonable distance from the market. The milk supply of New York City comes from as far away as Montreal on the north and Ohio on the west. Usually, however, 200 miles is the maximum radius of the supply for the largest cities and correspondingly less distances for the smaller ones.

Digitized by Google

The price of whole milk to the consumer is not affected by the freight rate directly, but once the market price of milk in a given market has been determined the price to a given producer supplying that market will vary with the freight and other costs of getting the milk into that market. For example, the Philadelphia price to the producer is quoted in the 51–60 mile zone, the New York price at 210 miles from New York City. If the farmer delivers his milk at a station farther out the difference in freight is deducted; if at a nearer point, the differential is added. The Twin Cities Milk Pro-

Chart A 100.

RAILROAD RATES ON LIVE CATTLE, DRESSED BEEF, AND PACKING-HOUSE PRODUCTS FROM CHICAGO TO NEW YORK, 1872 TO DATE.



JOINT COMMISSION OF AGRICUTURAL INQUIRY.

ducers' Association averages the rates and returns the same price to all producers, members of the organization. But regardless of the method of making it, the price of whole milk to the producer when shipped is distinctly and immediately affected by the rate.

The lowest average price to the producer in December, 1921, was for milk sold in Chicago 5.09 cents per quart, or 20.36 cents per gallon. On this basis, an 8-gallon can is worth to the producer $1.6288. At the same time the consumer was paying 12 cents per quart retail, or $3.84 for an 8-gallon can.

A freight rate of 24 cents per can or three-fourths of a cent per quart applies from a large group of stations 30 or 40 miles from the

Digitized by Google

city. This freight represents more than 14½ per cent of what the producer receives and more than 6 per cent of the retail price. Probably the average freight rate into Chicago on milk is higher than 24 cents, for the lowest rate in effect to-day is 23 cents per can. For New York City it is 17 per cent of the producers' price and 7 per cent of the retail price. For the United States the weighted average rate is probably less than 1 cent per quart.

The chief cost of milk to the family trade is for city distribution, and here a great variety of conditions has to be met. This spread in December, 1921, in the four cities shown ranged from 5½ to 7½ cents between price to producer and price to family trade. Numerous studies have been made of means of reducing this margin, but so far no method has been devised which will eliminate the American desire for delivery at the door by any one of several dealers. If overlapping routes could be eliminated the cost could be greatly reduced. Without such a change the greatest economies are impossible. The cooperative marketing bill permits the producers to eliminate much of this waste and should lead toward a reduced spread in consumers' and producers' price.

BUTTER.

Butter production has shown a marked change in two respects in the last 40 years. In the first place, practically all of the production was on the farms prior to 1880; to-day two-thirds of the butter produced in the United States comes from factories. As a result of this change from a local farm industry to a factory production the element of transportation has entered largely into the price of butter to the producer and to the consumer. In the second place, butter has had to meet the competition of several substitutes.

Seventy-six per cent of the butter produced in the United States in 1919 came from the Middle West or the States described by the census as East North Central and West North Central. Cream, which is the basis of butter, is in many cases secured from farms within a radius of 50 or 60 miles. In other cases the concentrators reach out as far as 500 miles to secure their raw material.

The economy of a centralized plant using the best mechanical devices, selling a large volume of butter and distributing over a wide area, is a recognized part of our business to-day, but if these economies are to be secured it is necessary that the cream shall be transported into these large plants.

The total amount of milk used for butter was estimated to be 32,310,117,000 pounds for 1920, or 35 per cent of the total milk production of 89,658,000,000 pounds. This is divided 18,135,117,000 pounds going to factories and the remainder, 14,175,000,000 pounds, being used on the farm.

In 1920 the total production of butter was 1,442,458,000 pounds, of which 17,487,735 pounds were exported.

Table A92 shows receipts at four important markets; chart A101 shows the source of supply for butter coming into Chicago. Imports in 1920 were 37,454,172 pounds, and in 1921, 18,558,388 pounds, enough to affect the price directly along the Atlantic seaboard and indirectly in the interior.

Digitized by Google

TABLE A92.—*Butter receipts at four leading markets.*

Market.	1921	1920	1919
	Pounds.	*Pounds.*	*Pounds.*
New York	212,948,550	164,608,125	226,698,000
Chicago	193,591,200	176,745,225	185,779,000
Philadelphia	58,765,725	48,631,050	51,191,000
Boston	74,537,700	72,991,875	73,223,000
Total	539,843,175	462,976,275	536,891,000

Upon the inbound product the rates are made in much the same way as milk destined to the city market, that is upon a more or less flexible mileage scale. Cream rates are generally higher than milk. On outbound movement of butter, unless there are special commodity rates, third-class rates apply to the carload shipment, and second-class rates to less-than-carload shipments. In its transportation it is necessary that the carriers furnish clean, sweet cars, in good condition, for any odor in the car will spoil the butter very quickly; and, likewise, if the drain pipes become clogged, ventilation and proper refrigeration are prevented. The movement is almost entirely eastbound to the great consuming centers, although from such distributing points as St. Louis, Chicago, and Pittsburgh there is considerable movement toward the south.

Effective August 1, 1919, the Interstate Commerce Commission ordered the rates on butter in carloads reduced from second to third class in official classification territory. Table A93 shows the freight rates on butter in carloads to New York and Chicago from representative points, with the changes made by the increase of August 26, 1920, and the decrease of 10 per cent of January 1, 1922, the latter being for an experimental period of six months. The less-than-carload rates were not changed, although approximately one-half the movement is in less-than-carload quantities.

TABLE A93.—*Freight rates in cents per 100 pounds on butter, in carloads.*

From—	To—	Prior to Aug. 26, 1920.	Aug. 26, 1920.	Jan. 1, 1922.
Saginaw, Mich	New York	66.0	92.5	83.5
San Francisco, Calif	do	250.0	333.5	300.0
Chicago, Ill	do	75.0	105.0	94.5
Louisville, Ky	Chicago	44.5	62.5	56.5
Johnson Creek, Wis	do	30.5	45.0	40.5
Do	New York	88.5	124.0	111.5
Fort Wayne, Ind	do	67.5	94.5	85.0

On December 1, 1913, butter brought to the producers an average of 29.2 cents per pound; on December 1, 1920, 54.7 cents; and on December 1, 1921, 41.1 cents. It can not be said that the changes in transportation rates have materially affected the fluctuations in prices. Although there is a material change in the price of butter from season to season and often from day to day, the seasonal fluctuations are due largely to the change in the amount of butter available, while the daily variations may be due either to a change in the supply immediately available at a given market or to the

Digitized by Google

efforts of the manufacturers and dealers to control the price. The price of butter fat to the farmer is obviously more largely influenced by these fluctuations in prices than by the freight rate.

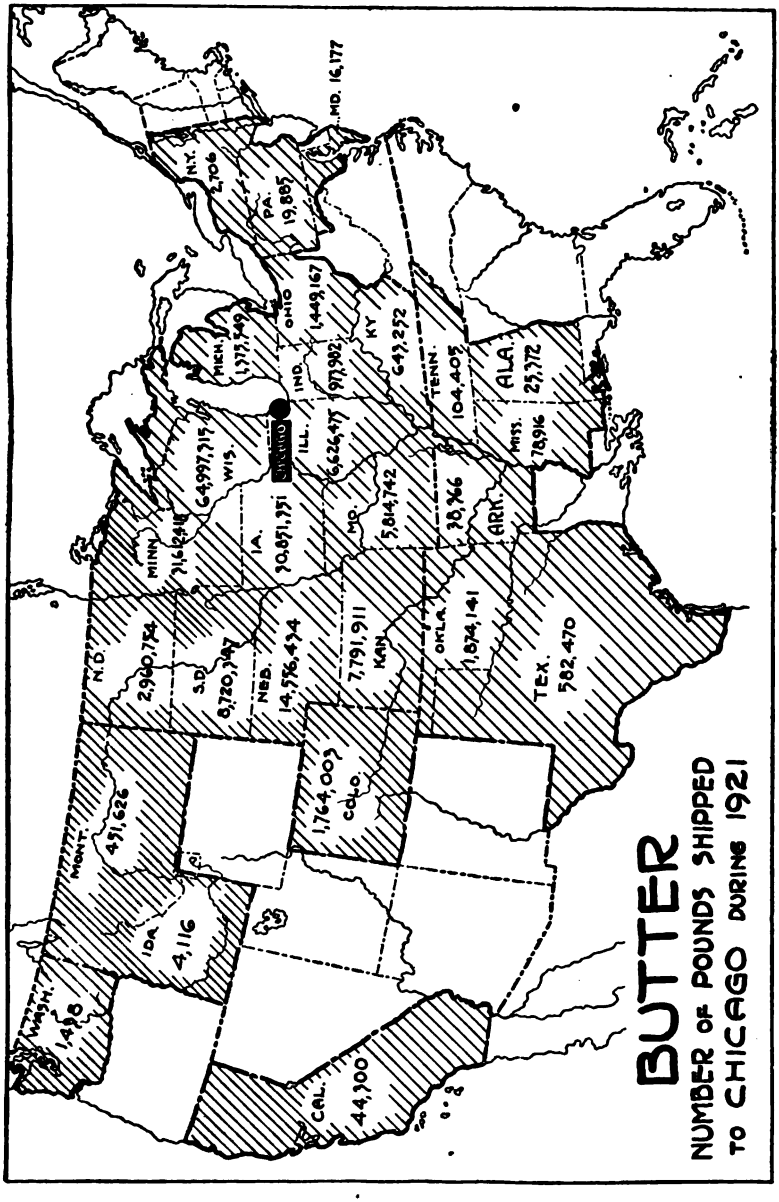


Chart A 101.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

At the same time it must be remembered that a fraction of a cent per pound of butter means a great deal of money in the aggregate when multiplied by millions of pounds. The Minnesota creameries have recently arranged to concentrate their product, shipping into

Digitized by Google

the concentrating point in less than carload quantities and out from that point in carloads, instead of shipping through from the creamery to final destination in less than carload quantities. This has meant a saving in freight charges from St. Paul to New York City of $76 on every shipment of 20,000 pounds, or two-fifths of a cent per pound. While this amount spread over each individual pound of butter may be small, yet the saving to the farmer is considerable, and this commission believes that so far as trade conditions will permit other creameries might well follow this example.

CHEESE.

The production of cheese is restricted to certain well-defined areas, as shown in Table A94 and chart A102. In 1914 Wisconsin alone produced 55.8 per cent of the cheese produced in this country, New York State 25.9 per cent, and all the other States producing but 18.3 per cent. In 1920 Wisconsin increased its share of the production to 74.6 per cent, while New York had decreased to 12 per cent, and the other States to 13.4 per cent. The distribution of cheese from Wisconsin is country wide, although more than one-half of the Wisconsin cheese is consumed in the densely populated area east of the Mississippi and north of the Ohio Rivers. Receipts at four principal markets are shown in Table A95. There is also a very considerable volume of cheese shipped into the Southeast. The area from which Chicago, a typical market, draws is shown by chart A103.

TABLE A94.—*Quantity and value of cheese produced in factories, by States, for the year 1919.*

[Bureau of the Census.]

State.	Quantity (pounds).	Value.	State.	Quantity (pounds).	Value.
California	9,708,885	$2,675,028	Oregon	9,424,399	$2,956,022
Illinois	4,851,054	1,344,910	Pennsylvania	15,438,708	3,727,997
Indiana	2,269,094	63,108	Utah	1,070,933	304,054
Iowa	1,015,790	293,685	Vermont	4,907,759	1,369,993
Michigan	12,857,230	3,454,423	Washington	2,291,428	697,819
Minnesota	10,116,048	2,757,387	Wisconsin	298,705,911	88,064,120
Missouri	188,920	39,612	All other States	8,544,635	2,716,088
New York	88,957,860	24,822,085			
Ohio	5,220,545	1,634,118	Total	473,569,199	136,940,469

TABLE A95.—*Cheese—Receipts at four leading markets.*

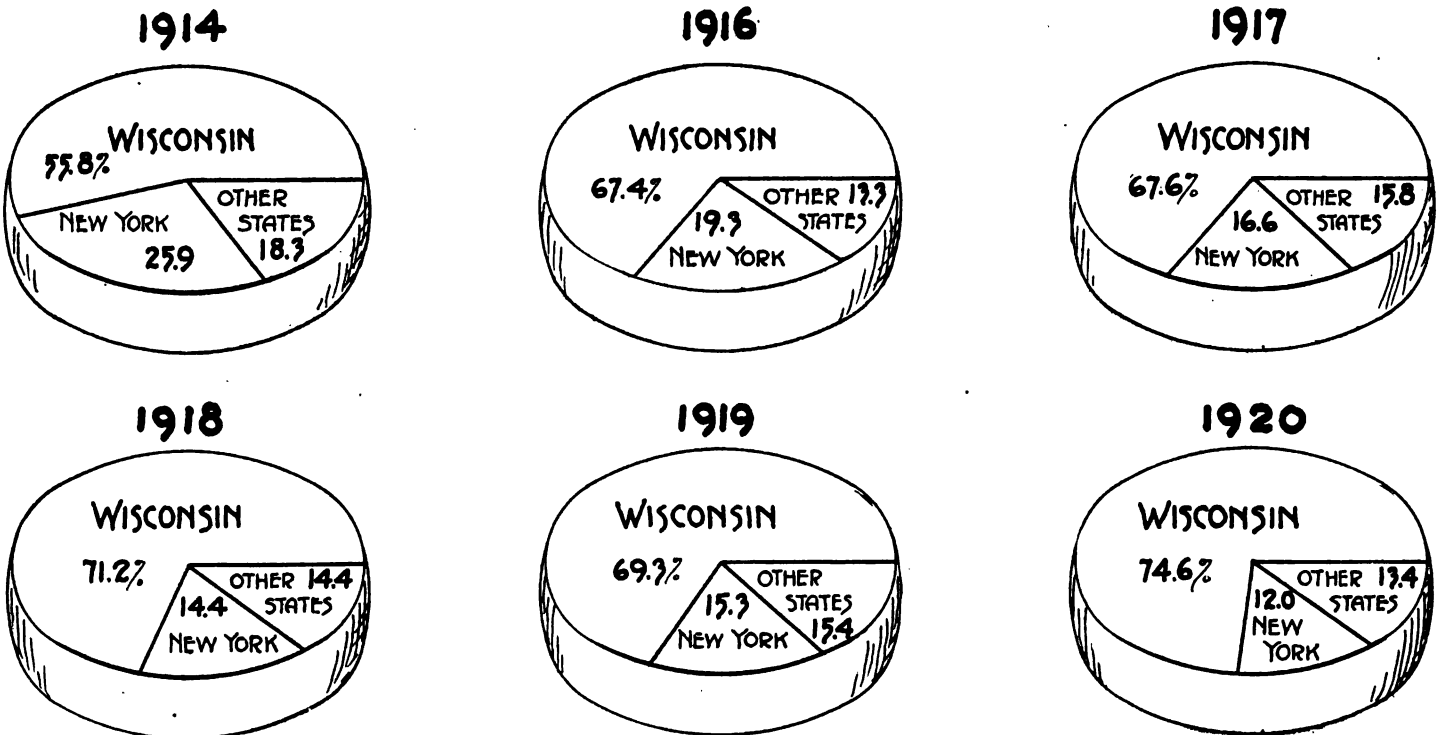
Market.	1921	1920	1919
	Pounds.	*Pounds.*	*Pounds.*
New York	51,981,396	47,003,774	66,045,806
Chicago	85,848,944	81,598,734	81,018,741
Philadelphia	20,951,864	16,865,693	21,392,423
Boston	13,207,544	12,996,717	17,577,631
Total	171,989,748	158,462,918	186,034,603

In Wisconsin the usual method of cheese production is to hire an expert to manage the factory for a contract price per pound of product. Ordinarily the milk is not sold to the factory by the

Digitized by Google

Chart A 102.

PERCENTAGE OF CHEESE PRODUCTION IN UNITED STATES, BY STATES, 1914–1920.[1]



[1] No data for 1915.

Digitized by Google

farmer, but is merely delivered to the cheese maker, who, after the manufacture, sells the cheese and allocates the returns to the individual farmers in proportion to the milk delivered. There are, in

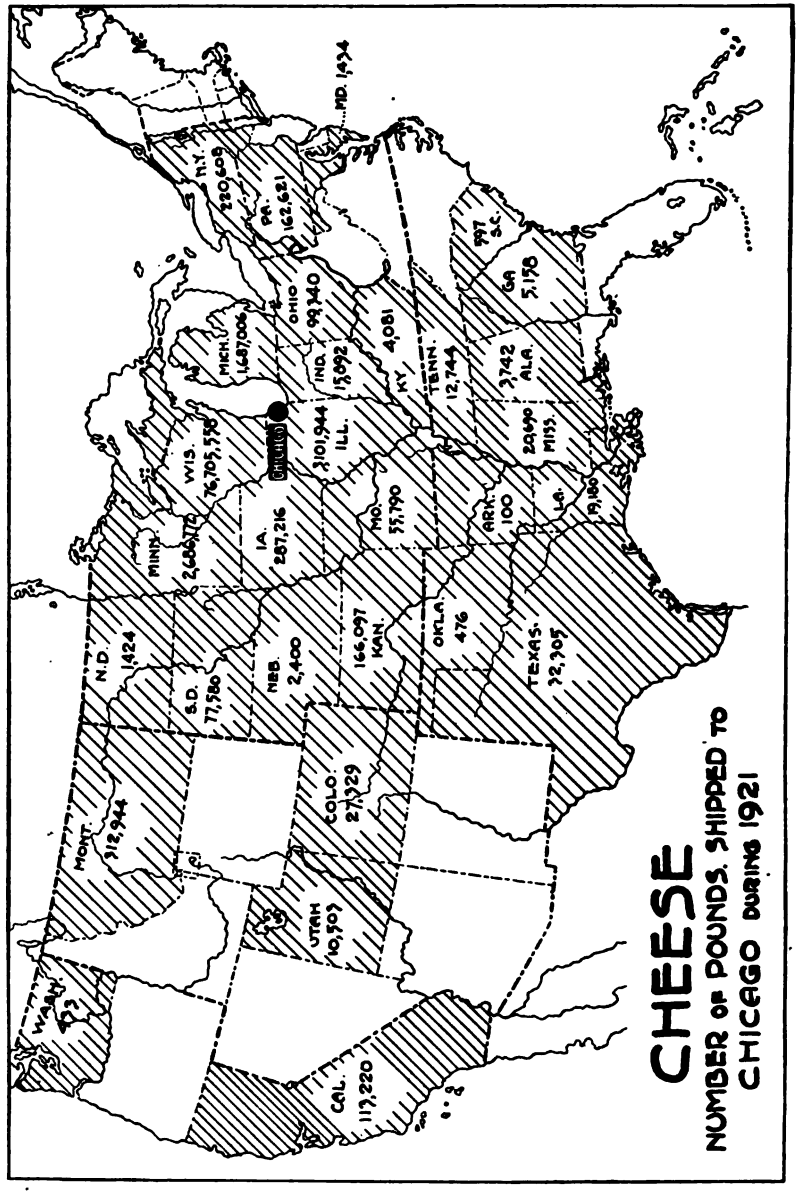


Chart A 103.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

addition, some factories in which the milk is bought outright and the cheese sold for the account of the owner.

After manufacture the cheese is shipped into a concentrating point by railroad or by truck. In 1920 a study was made on the Chicago

Digitized by Google

& North Western Railroad of the 67,000,000 pounds moved into concentrating points, with the following results:

Distance.	Per cent of total.	Maximum rate per 100 pounds.	Distance.	Per cent of total.	Maximum rate per 100 pounds.
		Cents.			*Cents.*
Less than 20 miles	46.88	11	50 to 75 miles	8.49	22.5
20 to 30 miles	11.72	13	75 to 100 miles	6.4	27
30 to 40 miles	10.59	15	100 to 200 miles	7.16	47.5
40 to 50 miles	8.19	17	Over 200 miles	.55	.....

With the increase in rates and the growth in the dairy industry the tendency has been to increase the number of concentrating points. After 15,000 pounds of cheese have been gathered at the concentrating point destined to one consignee, the railroads will permit the exclusive use of a refrigerator car without extra charge for the use of such car or for heater service or refrigeration. The less than carload shipments of less than 15,000 pounds move in the carriers' regularly scheduled refrigerator cars. Carload shipments, i. e., 20,000 pounds or more, move at carload rates plus an extra charge for refrigerator or heater service, the amount of such charge depending upon the particular point of origin or destination.

In official classification territory where a large part of the cheese is consumed the rates were increased from third to second class less than carload in April, 1921, or approximately 20 per cent. This increase was, of course, added to the general advance of August 26, 1920. Then in January, 1922, rates from the interior Wisconsin points were readjusted so as to align the rates properly in relation to the rates from the base points—Chicago, Milwaukee, and Manitoba. The result is that the cheese rates are now on a very high level, and by comparison with more valuable and more highly perishable commodities, such as eggs or grapes, are out of alignment.

The spread between the wholesale price of cheese at New York and at Chicago, although constantly widening, was so great that the cheese price at New York, less freight from Wisconsin, was greater than the price at Chicago less freight. If other circumstances are equal, the level of rates is not a serious impediment to the business, yet it is worth while to note that Chicago is the immediate and nearby market for the Wisconsin producer upon which he dumps his product whenever there is a surplus.

CONDENSED MILK.

The fourth use of fresh milk is by the condensers for the canning or preserving of fresh milk. There are four products, as follows:

First. Evaporated or unsweetened milk in which the raw whole milk is condensed about 50 per cent.

Second. Condensed or sweetened milk in which sufficient sugar is added so that the finished product is about 42 per cent sugar.

Third. Powdered milk, made either from skimmed milk, whole milk, or cream, and used largely for cooking or baking purposes.

Digitized by Google

Fourth. Milk compound, used for cooking and baking, in which the butter fat is removed and replaced by vegetable fat or cocoanut oil.

The raw milk bought from the farmer or canned in cooperative plants is brought into the cannery by wagon or motor truck, and the supply usually comes from a territory within 15 miles from the condensery. During 1919 the average price paid to the farmer for raw milk was $3.37 per 100 pounds of milk containing 4 per cent butter fat for an aggregate of 4,187,292,810[1] pounds of fresh milk. The figures, compiled by the Department of Agriculture for 3½ per cent milk, indicate that the total returns to the farmer for milk sold to the condenseries would be $121,850,000 in 1919. Present value is not over two-thirds this amount.

The domestic consumption of canned milk has grown very rapidly in the last few years. Originally and primarily it was used in remote districts, such as mining and lumber camps where it was practically impossible to secure fresh milk. To-day its use is extended to the industrial centers, where it is largely used among the wage earners. It is also used for table purposes and for infant feeding, as well as for cooking.

Condensed and evaporated milk are very largely shipped from the factory in tin cans in cases, in straight carload lots from the cannery to wholesale dealer, who in turn ships out less than carload quantities to the retailer. Canned milk loads heavily and compactly in the cars and is distributed throughout the United States. Unsweetened milk, usually termed "evaporated," is packed in the standard case of 48 tall-size cans, each can containing 1 pound of milk, the gross weight of the case being 60 pounds. Sweetened milk, usually termed "condensed milk," is packed in a case of 48 14-ounce cans, making the net weight of the milk 42 pounds and the gross weight of the package about 52 pounds.

Table A96 indicates the price per case and the rate per 100 pounds on condensed milk from several typical producing points to 14 large consuming centers in the country on January 1, 1913, and at the present time.

TABLE A96.—*Condensed milk prices and rates.*

PERCENTAGE OF INCREASE.

	Jan. 1, 1913.		Jan. 1, 1922.		Increase.		Percentage of increase.	
	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.
From Clymer, N. Y., to—								
Boston, Mass.	$3.50	$0.20	$4.10	$0.40½	$0.60	$0.20½	17	103
Hartford, Conn.	3.50	.20	4.10	.40½	.60	.20½	17	103
New York, N. Y.	3.50	.18	4.10	.38	.60	.20	17	111
Philadelphia, Pa.	3.50	.16	4.10	.36	.60	.20	17	125
Baltimore, Md.	3.50	.15	4.10	.35	.60	.20	17	133½
Norfolk, Va.	3.50	.20	4.10	.45½	.60	.25½	17	128
Atlanta, Ga.	3.50	.51	4.25	1.00	.75	.49	21½	96
Syracuse, N. Y.	3.50	.13½	4.10	.28½	.60	.15	17	111
Buffalo, N. Y.	3.50	.09	4.10	.20½	.60	.11½	17	128
Pittsburgh, Pa.	3.50	.11½	4.10	.29½	.60	.18	17	157
Cleveland, Ohio.	3.50	.10	4.00	.27½	.50	.17½	14½	175
Columbus, Ohio.	3.50	.14	4.00	.32½	.50	.18½	14½	132

[1] Census figures for condensed milk multiplied by 2.

Digitized by Google

TABLE A96.—*Condensed milk prices and rates*—Continued.

PERCENTAGE OF INCREASE—Continued.

	Jan. 1, 1913.		Jan. 1, 1922.		Increase.		Percentage of increase.	
	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.
From Clymer, N. Y., to—								
Cincinnati, Ohio	$3.50	$0.15½	$4.00	$0.37	$0.50	$0.21½	14½	139
Detroit, Mich	3.50	.13	4.00	.29½	.50	.16½	14½	127
From Sparta, Mich., to—								
Boston, Mass	3.50	.32	4.10	.61	.60	.29	17	90½
New York, N. Y	3.50	.29	4.10	.58	60	.29	17	100
Norfolk, Va	3.50	.26	4.10	.55	.60	.29	17	111½
Philadelphia, Pa	3.50	.27	4.10	.56	.60	.29	17	107½
Cincinnati, Ohio	3.50	.16	4.00	.34½	.50	.18½	14½	115½
Columbus, Ohio	3.50	.15	4.00	.34	.50	.19	14½	126½
Detroit, Mich	3.50	.12½	4.00	.27½	.50	.15	14½	120
Pittsburgh, Pa	3.50	.17½	4.10	.37	.60	.19½	17	111½
Atlanta, Ga	3.50	.59	4.25	1.02	.75	.43	21½	73
Jacksonville, Fla	3.50	.51	4.25	.94½	.75	.43½	21½	85½
Chicago, Ill	3.50	.13	4.00	.29½	.50	.16½	14½	127
St. Louis, Mo	3.50	.18	4.00	.39	.50	.21	14½	116½
Kansas City, Mo	3.50	.38	4.00	.73	.50	.35	14½	92
St. Paul, Minn	3.50	.294	4.00	.53½	.50	.241	14½	82
Oklahoma City, Okla	3.50	.62	4.10	1.04½	.60	.42½	17	68½
Fort Smith, Ark	3.50	.48	4.10	.82	.60	.34	17	71
Fort Worth, Tex	3.50	.70	4.25	1.13½	.75	.43½	21½	62
El Paso, Tex	3.50	.81	4.25	1.44½	.75	.63½	21½	78½
Alexandria, La	3.50	.49	4.10	.84	.60	.35	17	71½
Memphis, Tenn	3.50	.27	4.10	.45½	.60	.18½	17	68½
New Orleans, La	3.50	.37	4.10	.62	.60	.25	17	67½
From Oconomowoc, Wis., to—								
Boston, Mass	3.50	.37	4.10	.73	.60	.36	17	97½
New York, N. Y	3.50	.34	4.10	.70	.60	.36	17	106
Norfolk, Va	3.50	.31	4.10	.67	.60	.36	17	116
Philadelphia, Pa	3.50	.32	4.10	.68	.60	.36	17	113
Cincinnati, Ohio	3.50	.23	4.00	.40	.50	.17	14½	74
Columbus, Ohio	3.50	.23	4.00	.48½	.50	.25½	14½	111
Detroit, Mich	3.50	.21	4.00	.45	.50	.24	14½	114
Pittsburgh, Pa	3.50	.24	4.10	.46	.60	.22	17	91½
Atlanta, Ga	3.50	.66	4.25	1.06½	.75	.40½	21½	61½
Jacksonville, Fla	3.50	.56	4.25	1.03½	.75	.47½	21½	85
Chicago, Ill	3.50	.08	4.00	.14½	.50	.06½	14½	82
St. Louis, Mo	3.50	.17	4.00	.31½	.50	.14½	14½	85
Kansas City, Mo	3.50	.27	4.00	.46	.50	.19	14½	70½
Topeka, Kans	3.50	.31	4.00	.53	.50	.22	14½	71
St. Paul, Minn	3.50	.20	4.00	.34	.50	.14	14½	70
Oklahoma City, Okla	3.50	.51	4.10	.86½	.60	.35½	17	69½
Fort Smith, Ark	3.50	.39	4.10	.66	.60	.27	17	69½
Fort Worth, Tex	3.50	.61	4.25	.98½	.75	.37½	21½	61½
El Paso, Tex	3.50	.72	4.25	1.40	.75	.68	21½	94½
Alexandria, La	3.50	.40	4.10	.68	.60	.28	17	70
Memphis, Tenn	3.50	.33	4.10	.56	.60	.23	17	69½
New Orleans, La	3.50	.43	4.10	.73	.60	.30	17	70

COMPARISON SHOWING INCREASES ON JANUARY 1, 1916, AND AT THE PRESENT TIME.

	Jan. 1, 1916.		Jan. 1, 1922.		Increase.		Percentage of increase.	
	Price.	Rate.	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.	Price per case.	Rate per 100 pounds.
From La Junta, Colo., to—								
Denver	$3.45	$0.20	$4.15	$0.34	$0.70	$0.14	20	70
Trinidad	3.45	.23	4.15	.39	.70	.16	20	70
Santa Fe	3.45	.45	4.15	.765	.70	.315	20	70
El Paso	3.45	.54	4.15	.91	.70	.37	20	69
Wichita	3.40	.44	4.00	.745	.60	.307	18	69
Oklahoma	3.40	.50	4.10	.845	.70	.345	20	69
Omaha	3.40	.47	4.00	.795	.60	.325	18	69
Pocatello	3.45	.57	4.15	.895	.70	.325	20	57
Reno	3.40	.75	4.00	1.175	.60	.425	18	57
Phoenix	3.45	.75	4.15	1.175	.70	.425	20	57

Digitized by Google

The percentage of increase in the price per case runs from 14½ to 21½ per cent over 1913, while the increase in the freight rate is from 61½ to 175 per cent. The price in basic territory of $4 at the present time is 50 cents per case in excess of the 1913 price.

Canned milk is sold at the delivered price to the wholesaler, the price being the same at all points in the Middle West and Eastern States, known to the trade as basic territory. Outside of this section, as shown in Table A97, prices are slightly higher to cover additional transportation costs, but not enough higher to cover all the additional transportation costs.

TABLE A97.—*Rates and prices on condensed milk.*

	Jan. 1, 1913.				Jan. 1, 1916.			
	Price per case.	Rate per case.	Price per 100 pounds.	Rate per 100 pounds.	Price per case.	Rate per case.	Price per 100 pounds.	Rate per 100 pounds.
Portland, Me.	$3.50	$0.22	$5.83	$0.37	$3.40	$0.23	$5.67	$0.38½
Boston, Mass.	3.50	.22	5.83	.37	3.40	.23	5.67	.38½
New York N. Y.	3.50	.20	5.83	.34	3.40	.21	5.67	.35½
Atlanta, Ga.	3.50	.40	5.83	.67	3.40	.40	5.67	.67
Charleston, S. C.	3.50	.38	5.83	.63	3.40	.38	5.67	.63
Jacksonville, Fla.	3.50	.38	5.83	.64	3.40	.38	5.67	.64
Pittsburgh, Pa.	3.50	.14	5.83	.24	3.40	.15	5.67	.25
Columbus, Ohio.	3.50	.14	5.83	.24	3.40	.15	5.67	.25½
Louisville, Ky.	3.50	.15	5.83	.25	3.40	.16	5.67	.26½
Chicago, Ill.	3.50	.06	5.83	.10	3.40	.06	5.67	.10
St. Paul, Minn.	3.50	.12	5.83	.20	3.40	.12	5.67	.20
St. Louis, Mo.	3.50	.10	5.83	.17	3.40	.10	5.67	.17
Memphis, Tenn.	3.50	.21	5.83	.35	3.40	.21	5.67	.35
New Orleans, La.	3.50	.26	5.83	.43	3.40	.26	5.67	.43
Wichita, Kans.	3.50	.28	5.83	.47	3.40	.28	5.67	.47
Oklahoma City, Okla.	3.50	.31	5.83	.51	3.40	.31	5.67	.51
Fort Worth, Tex.	3.50	.37	5.83	61	3.40	.37	5.67	.61
San Francisco, Calif.	3.45	.16	5.75	.27½	3.25	.16	5.41	.27½
Los Angeles, Calif.	3.45	.29	5.75	.48	3.25	.29	5.41	.48
Denver, Colo.	3.65	.51	6.08	.85	3.45	.51	5.75	.85
Spokane, Wash.	3.65	.26	6.08	.43	3.25	.26	5.41	.43
Phoenix, Ariz.	3.75	.55	6.25	.91½	3.45	.55	5.75	.91½
Billings, Mont.	3.80	.34	6.33	.57	3.35	.34	5.59	.57

	Jan. 1, 1921.				Jan. 1, 1922.			
	Price per case.	Rate per case.	Price per 100 pounds.	Rate per 100 pounds.	Price per case.	Rate per case.	Price per 100 pounds.	Rate per 100 pounds.
Portland, Me.	$6.00	$0.44	$10.00	$0.73	$4.60	$0.44	$7.66	$0.73
Boston, Mass.	6.00	.44	10.00	.73	4.60	.44	7.66	.73
New York, N. Y.	6.00	.42	10.00	.70	4.60	.42	7.66	.70
Atlanta, Ga.	6.00	.64	10.00	1.06½	4.75	.64	7.91	1.06½
Charleston, S. C.	6.00	.62	10.00	1.03½	4.75	.62	7.91	1.03½
Jacksonville, Fla.	6.00	.62	10.00	1.03½	4.75	.62	7.91	1.03½
Pittsburgh, Pa.	6.00	.28	10.00	.46	4.60	.28	7.66	.46
Columbus, Ohio.	6.00	.29	10.00	.48½	4.50	.29	7.50	.48½
Louisville, Ky.	6.00	.29	10.00	.49	4.50	.29	7.50	.49
Chicago, Ill.	6.00	.10	10.00	.17	4.50	.10	7.50	.17
St. Paul, Minn.	6.00	.20	10.00	.34	4.50	.20	7.50	.34
St. Louis, Mo.	6.00	.19	10.00	.31½	4.50	.19	7.50	.31½
Memphis, Tenn.	6.00	.34	10.00	.56	4.60	.34	7.66	.56
New Orleans, La.	6.00	.46	10.00	.76½	4.60	.46	7.66	.76½
Wichita, Kans.	6.00	.48	10.00	.80	4.50	.48	7.50	.80
Oklahoma City, Okla.	6.00	.52	10.00	.86½	4.60	.52	7.66	.86½
Fort Worth, Tex.	6.00	.62	10.00	1.03	4.75	.62	7.91	1.03
San Francisco, Calif.	5.60	.26	9.33	.44	4.75	.26	7.91	.44
Los Angeles, Calif.	5.60	.45	9.33	.75	4.75	.45	7.91	.75
Denver, Colo.	5.75	.75	9.55	1.20½	4.65	.63	7.75	1.05
Spokane, Wash.	5.75	.41	9.55	.67½	4.80	.41	8.00	.67½
Phoenix, Ariz.	5.75	.86	9.55	1.43	4.90	.86	8.16	1.43
Billings, Mont.	5.90	.54	9.83	.89½	4.90	.54	8.16	.89½

Digitized by Google

As the production of condensed milk is widely scattered, with factories located in various sections near different consuming markets, a common price in basic territory has been the means by which each producer could get into the entire territory. The delivered price in basic territory effective February 15, 1922, was $4 per case, or 50 cents per case in excess of the price on January 1, 1913. The average transportation cost was 33½ cents per case, so that the factory price f. o. b. cars would be $3.665. In other words, the transportation charge is to-day about 9 per cent of the value.

The transportation cost is evidently an important factor in determining the extent and volume of distribution from any particular center to any particular section. In fact, it may be said that the present business depression has made it necessary for the canners to discontinue operation of certain plants and that in determining which plant shall be closed, the freight rates have been a major factor, and in some cases a controlling factor. The higher level of rates in effect to-day has accentuated the necessity of confining the production to those canneries which can most easily reach the consuming markets. While the present level of freight rates did not cause but merely aggravated the business depression and the falling off in demand for condensed milk, nevertheless this high level of freight charges has laid upon certain producing points a greater burden of distribution than they could carry. In such a competitive industry those plants which can most economically reach the consuming markets are most likely to weather the storms of business depression, while those which must carry larger burdens, whether in cost of products or in freight rates, will be the first to be eliminated.

Table A98 indicates the amount of condensed milk, cheese, or butter which can be secured from 100,000 pounds of fresh milk, together with the freight charges on these various amounts moving from Chicago to New York.

TABLE A98.—*Relative freight charges on the quantity of evaporated milk, cheese, and butter produced from 100,000 pounds fresh milk.*

[100,000 pounds milk=50,000 pounds canned milk, 60,000 pounds gross; 100,000 pounds milk=10,000 pounds cheese, 11,000 pounds gross; 100,000 pounds milk=4,500 pounds butter, 4,860 pounds gross.]

CHICAGO TO NEW YORK.

[Tariff authority, Kelly's 217 A, I. C. C. 1,100.]

	Date.	Carload rate.	Freight charges.
60,000 pounds canned milk	Present	$0.63	$378.00
11,000 pounds cheese	Dec. 31, 1921	1.05	115.50
Do	Jan. 1, 1922	.94½	103.95
4,860 pounds butter	Dec. 31, 1921	1.05	51.03
Do	Jan. 1, 1922	.94½	45.93

Canned milk moves in considerable quantity through the Panama Canal from the Pacific coast, although there is little or no movement westbound. One concern alone shipped 1,050,465 pounds from condenseries in Washington to Atlantic ports via the canal in 1920. During 1921 this same company shipped 8,301,723 pounds to Atlantic ports and 2,750,627 pounds to Gulf ports, or a total of 11,052,350 pounds through the canal. Prior to 1920 there was prac-

Digitized by Google

tically no movement via the canal on account of the heavy demand for vessels elsewhere, but since 1920 the ocean service has been restored, and the freight rates have been increased via rail until it is to-day more economical to transport via water.

The tabulation below shows the history of the eastbound all-rail rates applying on canned milk, carloads, minimum weight 60,000 pounds:

Date effective.	Per 100 pounds.	Per case.
Feb. 26, 1916	$0.62½	$0.37½
Mar. 1, 1917	.72½	.43½
June 25, 1918	.90½	.54½
Aug. 26, 1920	1.20½	.72½
Aug. 22, 1921	1.05	.63

These rates apply to Atlantic and Gulf ports and to practically all points east of the Rocky Mountains. During 1920 and 1921 the coastwise rate via the canal was and is to-day 50 cents per 100 pounds. In addition shippers pay an average of 11½ cents from factory to the port of Seattle, 8½ cents wharfage and handling charge at Seattle, and 3 cents per 100 pounds marine insurance. The total through rate via rail and water from the factory to Atlantic and Gulf ports is therefore 73 cents per 100 pounds, or 44 cents per case, about 69½ per cent of the all-rail rates.

POULTRY.

Out of a total of 372,825,264 chickens in the United States in 1920, 108,433,294 were in the West North-Central States.

Chart A104 indicates the wide radius of supply for poultry moving into the city of Chicago, showing that while a large number comes from the Middle West, there is also some movement from California.

As a general rule, the poultry is sold by the farmer to a huckster, who may in turn sell to another huckster or direct to some shipper. The packers are also buying a large number of live poultry, milk feeding them for from four or five days to a couple of weeks before dressing for the market. On some of the specialized farms in the Middle West poultry is dressed on the farm and shipped direct to market.

In the shipment of dressed poultry it is essential that it be carefully packed and graded. Fowls of the same size, same color of skin, and same general appearance should be put in the same box or barrel. When packed in barrels they should not be packed solid, as those in the center are likely to spoil. If packed warm the entire contents of the package are likely to spoil.

There is a large movement of live poultry from the West, particularly to New York City. This movement has grown tremendously in the last few years, partly due to the building of special live-poultry cars and partly to increased demand. These special cars are merely enormous coops on wheels partitioned to carry 5,000 chickens. At destination railroads must provide either special warehous-

Digitized by Google

ing facilities or a special inclosed yard for the unloading and distribution of poultry in order to prevent theft.

A carload of live poultry at New York City is worth from $4,200 to $6,000.

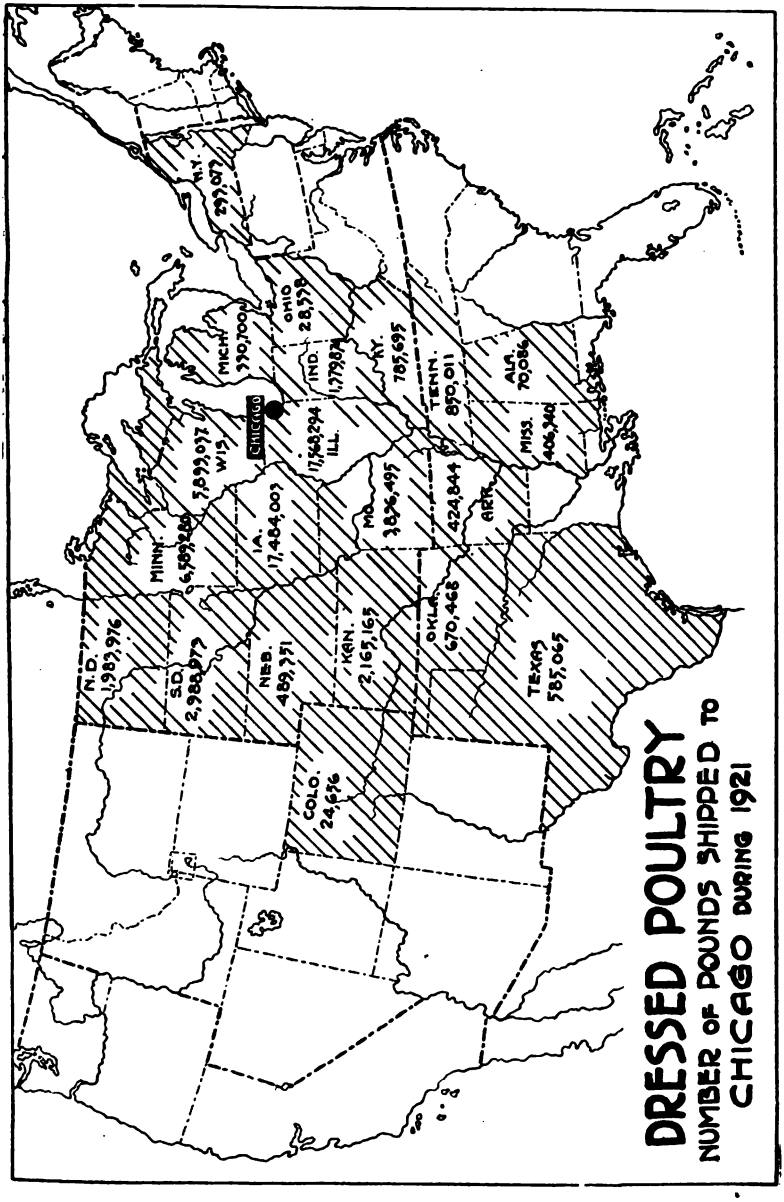


Chart A 104.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

When live poultry is shipped by freight, no extra charge is made for the transportation of feed in the car unless the consignee takes the surplus at destination, if any. Caretakers are given free trans-

Digitized by Google

portation with the loaded movement, and in some cases free return transportation.

A considerable number of young chicks are shipped by parcel post. In the spring every farm paper is filled with advertisements offering day-old chicks for sale and guaranteeing delivery by parcel post. What the exact volume of this movement is no one knows, but individual shippers handle as many as 25,000 per year.

Table A99 shows the receipts of dressed poultry at the principal markets during 1919, 1920, and 1921.

TABLE A99.—*Dressed poultry receipts at four leading markets.*

Market.	1921	1920	1919
	Pounds.	*Pounds.*	*Pounds.*
New York	124,551,836	101,094,445	113,706,144
Chicago	64,990,100	57,324,524	66,953,692
Philadelphia	22,892,906	21,606,182	23,906,331
Boston	39,921,909	34,087,208	37,531,307
Total	252,356,751	214,112,359	242,099,474

In November and December, 1913, the average market price was 14½ cents, while in 1921 it was 22 cents, or nearly 152 per cent of the 1913 price.

There is some movement of live poultry by express. The express classification provides that all foods and drinks shall be carried as second class unless otherwise specified. The present classification of live poultry is hybrid, being second class for hauls of less than 400 miles and first class for more than 400 miles. The result of this increase of nearly 33⅓ per cent has been to reduce the movement of live poultry by express to the detriment of the express company and of the producer. The dealers state that shipments which formerly moved by express are now moving largely by freight, being trucked into other towns, remaining on the farm, or being sold to near-by packing plants at prices prevailing there. The express company states that the claims paid on live poultry for the 12-month period ending November 30, 1919, were $264,742.43, or 10 per cent of the gross revenue on live poultry.

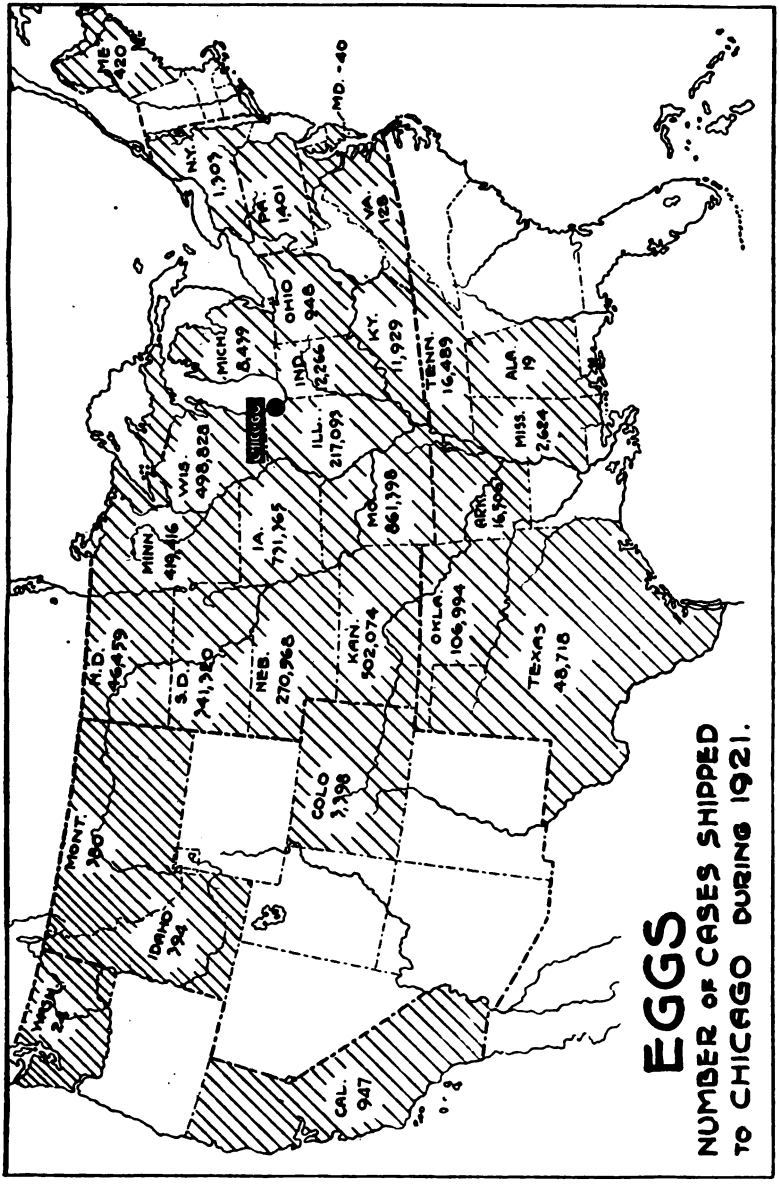
In Table A11, on page 15, is shown the history of some typical freight rates on dressed poultry. The present freight rates on live and dressed poultry are out of line with each other in some districts, due to the various methods of applying the 10 per cent reduction effective January 1, 1922, while in other districts this relationship has been preserved. In official classification territory the carriers applied the reduction to dressed poultry, in southern territory to live poultry, and in western territory to both.

The present rate on live poultry from Chicago to New York is $1.05 per hundred pounds, or $210 per car of 20,000 pounds. Adding to this amount of freight charges the cost of feed and water, expense of caretakers and other incidentals, the total cost of transportation is probably around $275 or $300. With an average price of $5,000 for a car, the total charges for transportation of $300 would be about 6 per cent of the total value, or 6 cents per chicken, if the car is loaded full.

Digitized by Google

EGGS.

The principal centers of production for eggs are in the Middle West in the same States which furnish the largest proportion of the poultry. Various methods of getting the eggs from the individual



farms to the city market are in constant use. There is still the old system of barter at the country store, after which the merchant makes up a case or two of eggs and forwards them to his dealer

Digitized by Google

in the city. The farmer may himself collect a case or two of eggs and ship either to a dealer or to some concentrating point or packer. Farmers are now also organizing cooperative shipping associations, known as egg circles, which concentrate the eggs in considerable quantity and forward them to some market, either on consignment or upon direct sale to some dealer.

In the shipment of eggs one of the principal wastes is the lack of any uniform system of grading. In order to secure the best market the country shipper should be able to guarantee that the eggs are absolutely fresh, and should grade them so as to secure within a case uniformity in color, size, and shape. The Boston market pays a premium for brown eggs. The New York market pays a premium for white eggs sufficient in many cases to cover the transportation charges from Chicago to New York, while some other markets do not distinguish between the two colors. Such a premium may be wholly unjustifiable, but it should be recognized by the shippers. Every attempt on the part of the farmer to cater to the quality trade will result in greatly increased returns.

There is a considerable movement of eggs from the United States to Canada, where they are carefully candled, graded, and then shipped to Great Britain. Because of the careful standardization of grades in Canada, England accepts these eggs in preference to eggs direct from America.

This commission accordingly believes that the Department of Agriculture should make a study of this situation and lay down such standards for use in the United States as will enable American producers and shippers to export eggs direct to European countries.

Chart A105 indicates the States from which Chicago drew its supply of eggs during 1921, showing that the larger portion of the supply comes from the Middle West, also indicating that eggs travel long distances. Several hundred cars are shown as coming from the Petaluma district of California.

Table A100 shows the average receipts and average market prices at Chicago and New York, and the average farm prices in the United States, for the years 1913 to 1921, inclusive. Table A101 shows the receipts of eggs at New York, Chicago, Philadelphia, and Boston.

TABLE A100.—*Average receipts and average market prices at Chicago and New York and average farm prices in the United States of eggs for the years 1913–1920.*

Year.	Chicago.			New York.		
	Receipts (cases).	Market prices per dozen.	Farm prices per dozen.	Receipts (cases).	Market prices per dozen.	Farm prices per dozen.
		Cents.	*Cents.*		*Cents.*	*Cents.*
1913	4,593,800	24.3	21.3	4,713,555	37.5	21.3
1914	4,083,163	25.8	22.5	4,882,222	39.0	22.5
1915	4,896,246	25.0	22.0	5,585,329	50.0	22.0
1916	5,452,737	28.3	24.6	4,858,274	31.6	24.6
1917	5,678,679	40.6	33.8	4,357,061	44.1	33.8
1918	5,049,743	44.2	39.5	5,026,548	48.6	39.5
1919	4,616,652	48.2	43.8	6,007,641	55.7	43.8
1920	4,153,584	51.7	47.9	5,157,535	57.5	47.9

Digitized by Google

TABLE A101.—*Receipts of eggs at four leading markets.*

Market.	1921	1920	1919
	Cases.	*Cases.*	*Cases.*
New York	6,608,840	5,157,535	6,007,643
Chicago	4,154,879	4,153,584	4,631,550
Philadelphia	1,647,059	1,395,909	1,714,318
Boston	1,820,138	1,647,648	1,720,460
Total	14,230,916	12,354,676	14,073,971

While the quantity of shell eggs is much less than the normal demand, the amount of frozen eggs is very much greater. The cold storage of eggs is to the farmer of the utmost benefit, as it provides a market for the eggs produced in the spring without the necessity of that market immediately consuming the supply then furnished. In other words, cold storage acts as a stabilizer upon the price, both to producer and consumer, and gives the consumer a regular supply.

At the same time a very large proportion of the eggs sold by the farmers leave their hands in March, April, May, and June, when the prices are lowest.

In the transportation of eggs two principal questions are involved: First, they must be kept at proper temperature to prevent spoiling; second, due to the fragile nature of the commodity they must be properly packed in the case and properly stowed in the car and transported without any rough handling, either in the switching yards or on the line.

In order to protect themselves against loss, numerous rules have been made by the carriers which specify in great detail the penalties for noncompliance with these rules. In general, carriers inspect the cars at destination to see that the rules have been complied with, but the eastern roads are now beginning to inspect these cars at Chicago as well as at the eastern destination.

This commission recommends that, so far as possible, carload shipments of eggs should be inspected at point of origin, so that the shipper there may know that he is complying with the carriers' requirements, or that he may have an opportunity to improve the stowing so that the eggs can be carried safely.

The history of some typical rates on eggs is shown in Table A10 on page 15. Unfortunately it is not possible to state what percentage of the eggs actually moved at these rates, as the penalties referred to are applied directly by the carriers and paid by the shippers. The third-class rate which applies throughout the United States, except where special commodity rates are named, is in reality a basic or minimum rate above which other rates will be applied if any of the rules are broken.

Shippers and carriers have been studying the problem of safe transportation of eggs for over a year. A material reduction in the loss and damage claims, which to-day run in excess of $1,000,000 per year, can be secured only by the widespread use of such interior packing in the cases as will consistently and certainly protect the eggs. At the present time the railroads endeavor to restrict the use of straw-

Digitized by Google

board flats and fillers to new flats and fillers, but the impossibility of examining every case of eggs to determine whether the interior packing is or is not new is evident to every carrier, as well as to every shipper and receiver of eggs.

This commission believes that some means should be devised for the transportation of eggs in containers which may be used repeatedly with safety, and commends to the carriers and shippers a very careful consideration of the subject from this point of view.

FERTILIZER.

Successful agriculture is in a large measure dependent upon the adequate and scientific use of fertilizer. In turn the fertilizer industry is largely dependent upon adequate transportation facilities and reasonable transportation charges. The so-called "manufacture" of fertilizer is, in reality, the assembling of fertilizer materials at proper points and mixing them in the desired proportions. The cost of fertilizer materials and transportation costs, both inbound and outbound, constitute a heavy item of expense encountered by the fertilizer companies. Manufacturing costs and sales expenses are relatively small under normal conditions.

The consumption of fertilizer is much heavier in the States south of the Ohio and east of the Mississippi than elsewhere. In those States (excluding Kentucky and Louisiana) approximately 4,800,000 tons of fertilizer were consumed in 1920. In the same year approximately 1,600,000 tons were consumed in New England, Delaware, Maryland, New Jersey, New York, Rhode Island, Pennsylvania, and West Virginia. Approximately 1,000,000 tons of fertilizer were consumed during the same year in Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, Minnesota, Ohio, and Wisconsin. Of that tonnage most was consumed in Illinois, Indiana, Michigan, and Ohio.

In 1921 the tonnage of fertilizer consumed fell off sharply. In the Southeastern States it dropped from 4,800,000 tons to approximately 2,600,000 tons. In the New England and eastern seaboard States the consumption decreased and likewise in the Central Western States. The greatest decrease, however, both in tons and percentage, was in the Southeastern States. While the consumption of fertilizer during 1920 was larger than in any previous year, yet the increase in 1920 was only normal. The consumption in the Southeastern States in 1921 was less than it had been for more than 15 years.

The phenomenal drop in the consumption of fertilizer in 1921 was coincident with a sharp decline in prices.

In the Southeastern States fertilizer is sold on a delivered basis; that is, the fertilizer companies pay the freight charges to the points of destination. Table A102 shows the comparative spring prices of 12 standard brands of fertilizer used in the Southeastern States from 1914 to 1921, inclusive:

Digitized by Google

TABLE A102.—*Fertilizer—Southern territory, spring prices.*

[Delivered prices including outbound freight. Reference: A, phosphoric acid; B, nitrogen (ammonia) C, potash.]

Brand.			1914	1916	1917	1918	1919	1920	1921
A	B	C							
10	2	2	$22.50	$33.00	$32.50	$44.50	$51.00	$43.50	$27.84
10	3	3	27.20	42.50	41.25	57.25	65.00	52.25	32.67
10	2	4	24.70	45.00	42.50	56.75	63.75	49.50	31.34
10	1	3	20.70	36.25	34.75	44.25	49.25	40.75	26.50
9	2	3	23.10	38.50	37.00	50.00	56.25	45.50	29.00
9	3	3	26.60	42.00	40.75	56.50	64.25	51.50	32.00
8	2	2	21.50	32.00	31.50	43.00	49.25	41.75	26.50
8	3	3	26.00	41.50	40.25	55.75	63.25	50.00	31.50
8	4	4	30.50	51.00	49.00	68.28	77.25	59.50	36.34
10	0	2	14.50	27.50	25.00	31.75	35.00	31.75	21.50
10	0	4	16.50	39.50	35.00	43.75	47.50	37.75	25.00
16	0	0	14.25	18.00	18.00	21.00	25.50	25.50	18.84

As will later appear, the drop in prices in the Southeastern States (1921 compared with 1920) was greater than the entire inbound and outbound transportation costs paid by the fertilizer industry.

In so-called "trunk line" territory the following comparative prices prevailed during the years 1914 to 1921, inclusive, the prices shown being agents' prices f. o. b. Carteret, N. J., in which territory the purchaser pays the freight from the points of manufacture as indicated by Table A103.

Table A103 is typical of the f. o. b. prices prevailing during the same periods in the Central Western States and in New England. While the practice is not uniform, it is generally the case in those territories that the purchaser of fertilizer pays the freight from points of manufacture. Where the seller pays the freight the prices are adjusted accordingly.

TABLE A103.—*Fertilizer—Agents' prices f. o. b. Carteret, N. J., 167-pound bags.*

[A, ammonia; B, phosphoric acid; C, potash.]

Grades.			1914, spring and fall.	1915, spring and fall.	1916, spring and fall.	1917		1918		1919		1920		1921	
						Spring.	Fall.	Spring.	Fall.	Spring.	Fall.	Spring.	Fall.	Spring.	Fall.
A	B	C													
16			$13.40	$12.90	$16.00	$14.50	$18.00	$20.25	$24.00	$24.50	$22.75	$24.25	$30.25	$22.50	$16.25
1	8	1	16.55	15.80	20.25	19.25	26.00	28.75	32.00	33.00	25.00	30.75	36.25	25.25	23.25
2	8	2	20.30	19.55	28.50	28.00	38.00	41.25	46.00	47.25	33.00	39.50	46.50	31.50	28.25
3	9	4	25.75	26.25	42.25	42.25	56.50	60.75	67.00	68.25	45.00	52.00	61.00	40.50	35.00
4	7	5	29.60	29.35	49.50	50.00	67.50	71.75	79.25	80.50	51.00	59.00	69.00	45.25	38.25
Average			21.12	20.77	31.30	31.20	41.20	44.55	49.65	50.70	35.35	41.10	48.60	33.85	28.38

The problem of calculating the average transportation costs on fertilizer is exceedingly difficult. To begin with, fertilizer, so called, may consist of one plant food or of a mixture of two or three plant foods. The essential plant foods are ammonia, available phosphoric acid, and potash. The materials employed in making the different mixtures are derived from different sources, and hence the transportation costs vary with the mixture. In different portions

Digitized by Google

of the country the trade consumption of different kinds of fertilizer materially varies. Thus, acid phosphate, in itself a fertilizer without other plant foods being added, will constitute 70 per cent of the trade consumption of fertilizer in one territory during one of the seasons and in another territory it will not constitute more than 5 per cent.

The variation in trade consumption complicates the effort to arrive at transportation costs. But the problem is even more difficult. The various plant foods (ammonia, potash, and phosphoric acid) are contained in many available commodities that are selected with regard to prices and transportation costs. Thus, organic ammoniates may be derived from tankage produced in the packing centers, from cottonseed meal produced in the Southeastern and Southwestern States, and from various waste materials known as nitrogenous manures. Nitrate of soda is the principal source of mineral ammonia, and is obtained solely from Chile; but sulphate of ammonia and cyanamid are other mineral ammoniates that are produced in this country. Potash comes principally from the French and German Provinces, although a limited domestic supply is obtainable from western Nebraska, California, and Canada, the last-named source of supply consisting of wood ashes.

Phosphoric acid is derived chiefly from the phosphate rock deposits of Florida and Tennessee, although Idaho contains some deposits. To make phosphoric acid, it is necessary to mix in equal proportions phosphate rock and sulphuric acid. The latter is obtained from the by-product operations of the copper smelters. There is, however, a considerable use of crude sulphur brought from Louisiana and Texas to the fertilizer plants, where the fertilizer companies themselves make sulphuric acid.

From the foregoing it can be understood how difficult it is to arrive at a fair average transportation cost incident to the making and distribution of fertilizer. Considering, in addition, that the fertilizer plants are located throughout the entire eastern half of the United States, being especially numerous in the Southeast, the problem of striking averages is clearly shown.

The solution has been found in the determination of actual costs at selected typical locations of fertilizer manufacture. Taking first the Southeastern States, it is considered that the following locations embrace all the varieties of conditions and transportation costs encountered in that territory: Charleston, S. C.; Richmond, Va.; Norfolk, Va.; Charlotte, N. C.; Augusta, Ga.; Americus, Ga.; Jackson, Miss.; Atlanta, Ga.; Mobile, Ala.; Memphis, Tenn.; Montgomery, Ala.; Nashville, Tenn.

The actual plant operations at those places were investigated to determine the different fertilizer materials used at each place, the sources of supply, and the freight costs both inbound and outbound to the typical trade territories surrounding each place. The study covers operations for a series of years so as to reflect properly the different freight rate levels prevailing at different times.

It may be said with substantial accuracy that in the Southeastern States there were no changes in freight rates prior to June 25, 1918, so that the figures shown in Table A104 for 1918 reflect the rate levels prevailing in that territory prior to that date at least as

Digitized by Google

far back as 1906. The figures shown for 1920 indicate the transportation costs following the 25 per cent rate advance, effective June 25, 1918, and continuing until August 26, 1920. The figures shown for 1921 reflect the rate level prevailing since August 26, 1920, at which time there was another general advance of 25 per cent in all freight rates.

TABLE A104.—*Fertilizer—Average per ton freight cost, 12 plants, for years 1918-1920 and 1921.*

[In cents per ton 2,000 pounds.]

	Acid phosphate.			Complete goods.		
	1918	1920	1921	1918	1920	1921
Charleston, S. C.	433	535	624	399	490	590
Richmond, Va.	441	559	630	414	527	635
Norfolk, Va.	440	558	605	391	506	595
Charlotte, N. C.	430	533	670	445	560	711
Augusta, Ga.	439	545	682	390	585	613
Americus, Ga.	395	496	621	364	458	581
Jackson, Miss.	254	317	404	244	306	388
Atlanta, Ga.	373	468	583	392	492	623
Mobile, Ala.	293	372	469	269	342	438
Memphis, Tenn.	308	397	507	327	420	537
Montgomery, Ala.	342	435	554	367	476	606
Nashville, Tenn.	293	367	462	350	439	560
Total	4,441	5,582	6,811	4,352	5,601	6,875
Average 12 plants	370	465	567	362	466	573

Considering the fact that acid phosphate is a fertilizer, and is used without other ingredients, it seems proper to show the transportation costs on acid phosphate and on mixed goods separately. In calculating the transportation costs on mixed fertilizer it appears that a mixture, known as "10–2–2" (being 10 per cent available phosphoric acid, 2 per cent ammonia, and 2 per cent potash), is most extensively used in that territory, and is fairly representative of the average grade shipped.

A numerical average of the transportation costs given in Table A104 indicates that in 1921 the combined inbound and outbound transportation costs on acid phosphate amounted to $5.67 per ton, and on a complete mixture (10–2–2) $5.73 per ton. Such costs are approximately 60 per cent greater than in 1918 and in prior years back to 1906. The increase on acid phosphate has been $1.93, and on mixed fertilizer $2.11 per ton.

In relation to prices the freight costs (combined inbound and outbound) in the Southeastern States are greater now than formerly, both because of the increased rates and the reduced prices.

Table A105 is designed to show the increased ratio of transportation costs to prices in the spring of 1918, in the spring of 1920, and in the spring of 1921. A separation has been made again as between acid phosphate and mixed fertilizers. The average prices on 11 brands of mixed goods were used in making the calculation, although the freight costs on the mixed goods were based upon a mixture of 10–2–2 alone.

Digitized by Google

TABLE A105.—*Fertilizer—Ratio of freight cost to values, for years 1918–1920 and 1921.*

[Per ton 2,000 pounds.]

	1918	1920	1921
Acid phosphate:			
Value	$21.00	$25.50	$18.84
Average freight (12 plants)	$3.70	$4.65	$5.67
Freight percentage to cost	17.62	18.22	30.09
Complete goods:			
Average value 11 brands	$50.11	$45.80	$29.09
Average freight (12 plants)	$3.62	$4.66	$5.73
Freight percentage to cost	7.19	10.15	19.69

Central western territory approximation of the transportation costs in making and distributing fertilizer has been attained by investigating such costs at the following places: Chicago; Chicago Heights; Hammond, Ind.; Cincinnati; Sandusky; New Albany, Ind.; Cleveland; Baltimore.

In such territory the freight transportation costs on fertilizer are materially higher than in southern territory. This is due to the longer hauls on the raw materials (other than tankage) and to the longer average hauls on the outbound movements. Furthermore, the freight rates on finished fertilizer are higher in official classification territory than in the southern territory.

In the period from November, 1914, to date the average combined inbound and outbound transportation costs at plants serving the central western territory increased from $4.36 per ton to $10.55 per ton, or $6.19 per ton. This is an increase of approximately 142 per cent.

The foregoing calculations are based upon average costs on all grades of fertilizer.

In the central western territory fertilizer is usually sold f. o. b. point of manufacture, the purchaser paying the freight on the finished goods.

At this time the outbound freight costs from the places above enumerated average approximately $4 per ton. This likewise represents an increase of approximately 140 per cent since November, 1914.

The following table shows the average prices of the different grades of fertilizer f. o. b. points of manufacture in the periods above shown plus the outbound freight costs then prevailing:

November, 1914	$22.78
November, 1914, to June 24, 1918	36.12
June 25, 1918, to Aug. 25, 1920	46.25
Aug. 26, 1920, to Jan. 1, 1921	40.94
October, 1921	32.38

Based upon the average delivered prices just shown, it appears that the combined inbound and outbound transportation costs on fertilizer in the central western territory bore the following ratio to the delivered prices:

	Freight costs.	Delivered prices.	Ratio.
			Per cent.
November, 1914	$4.36	$22.78	19.1
November, 1914–June 24, 1918	6.11	36.12	16.9
June 25, 1918–Aug. 25, 1920	7.64	46.25	16.5
Aug. 26, 1920–Jan. 1, 1921	10.55	40.94	25.7
October, 1921	10.55	32.38	32.6

Digitized by Google

It thus appears that the difference of $9.60 per ton in price between November, 1914, and October, 1921, is largely accounted for by the increase of $6.19 per ton in the transportation costs, leaving but $3.41 per ton for increased manufacturing costs and prices of fertilizer materials. At this time the ratio of transportation costs to delivered prices (using the prices prevailing in the fall of 1921) has risen to 32.6 per cent.

It is not feasible to make an accurate calculation of transportation costs on fertilizer sold in the New England territory. The consumption in that territory is relatively small and consists largely of that fertilizer which is used in Aroostook County, Me. Various plants ship a portion of their outputs into that territory, such as those located at Baltimore, Buffalo, and Carteret, N. J. There are also plants located at Boston, Mass., Houlton and Searsport, Me.

In connection with the New England consumption of fertilizer a large part of the transportation service, both on raw materials and the finished product, is rendered by vessels at whatever may be the prevailing charter rates for bottoms.

Furthermore, there are in New England a number of so-called dry mixers, which bring in acid phosphate and mix it with other materials derived from various sources.

Prices of fertilizer in New England, as in other portions of the country, have sharply declined since 1920, and the transportation costs now bear a materially higher ratio to the delivered prices of fertilizer than prevailed prior to the war.

In summarizing the foregoing facts it may be said that the present price of fertilizer and phosphate are now close to the pre-war basis except for the higher freight costs prevailing. Material prices and costs of manufacture are almost back to normal, leaving the present freight costs almost entirely responsible for the difference between current prices of fertilizer and those which prevailed prior to the war.

In the Central West the measure of freight-rate increases has been so great and the unit of purchase is so relatively large that a restoration of anything like the pre-war freight costs in that territory would, by reason of competitive conditions, bring about a still further and material reduction of fertilizer prices in that territory. Such a reduction in prices, due to a reduction in freight costs, would necessarily tend to alleviate in some measure the difficulties of the farmers and enable them to purchase and use more fertilizer, with consequent benefits in the way of increased production and early maturity of crops.

In the Southern States the immediate problem is somewhat different and more complicated. Prices of fertilizer are practically back to a pre-war level, notwithstanding the increased freight costs.

If, by reason of the efforts of the Federal Government, the farmer in the South should be aided sufficiently to enable him to resume the purchase and consumption of fertilizer to a normal degree, the difficulty of the fertilizer companies in that territory would be lessened and doubtless competitive forces would, in a short time, cause a still further reduction in prices at least equal to the reduction of freight costs paid by the fertilizer companies.

Digitized by Google

AGRICULTURAL IMPLEMENTS.

Less than 10 per cent of the annual expenditure of the farmer is for agricultural implements. Agricultural implements are necessary for the preparation of the ground, sowing, cultivating, reaping, and harvesting of the farmer's crops. Their use has very largely increased the per man production and in some degree accounts for the increase per acre production. The farmer is interested in agricultural implements, their prices, fluctuations, and manufacture.

According to the Bureau of the Census, there were 601 implement factories in 1914, as against 521 in 1919. The value of their product in 1914 was $164,087,000, as against $304,961,000 in 1919. It is estimated that the production of agricultural implements for 1920 amounted to $536,945,000, of which $193,563,000 was the value of tractors, an item which was not of great importance in the previous census. The outbound tonnage of agricultural-implement plants in 1920 shows for domestic 1,848,130 tons and for foreign 227,030, a total of 2,075,160 tons. These figures do not include twine tonnage. All implement manufacturers do not manufacture twine. The information received as to twine price for 1922 shows it to be 6 per cent over 1914. It is impossible to obtain the twine tonnage because of the large number of small independent companies now engaged in the manufacture of this commodity.

In part 1 of this report, pages 188 to 192, is given the prices by years of various agricultural implements from 1913 to 1922, inclusive. From this it will be noted that the peak reached in prices of agricultural implements over 1913 or 1914 was 75 per cent, whereas the wholesale prices of all commodities reached a peak of 172 per cent. From investigations made by this commission it was also found that the present factory prices of agricultural implements, if power equipment and twine are not included, when compared with the prices of 1914, show an increase of 41 per cent over the 1914 prices; if power equipment and twine were included in the computation, the increase of prices over those of 1914 would be less than 20 per cent, while the present prices of all commodities when compared with the prices of 1914 show an increase of 52 per cent.

In 1914 the transportation charges on agricultural implements were about 11 per cent of the selling price to the farmer, including the raw materials which enter into their construction. In 1921 this had increased to 15½ per cent of the selling price. About two and a quarter to two and a half tons of material inbound are required to produce one ton of agricultural implements. The materials used are known as the basic commodities, such as pig iron, steel, coal, coke, lumber, etc. The increased freight charges on these basic commodities, both in the conversion of the ore into steel and the timber into lumber, which in turn is worked up into various wood parts, are important factors in determining the price of agricultural implements. A reduction in freight rates on these basic commodities would assist in reducing the cost to the consumer. The question of the relation of freight rates to the production of steel is treated more fully in the report under steel.

Our investigations also lead us to the conclusion that the agricultural-implement companies render special services to the farmers in

Digitized by Google

the establishment of their branch houses throughout the various agricultural sections of the United States. About 85 per cent of the farm implements are shipped direct to purchasers, including both dealers and farmers' cooperative associations. The remaining 15 per cent are distributed to the purchasers through the branch houses, which also carry emergency stocks of machines and repair parts, including repairs for machines sold more than 30 years before. A further distinct service to agriculture is rendered through these branch houses by their forces of experts who cooperate with the dealers in assisting farmers to set up, adjust, and repair machines.

An interesting study has been made as to the number of bushels of corn necessary for the purchase of certain implements.

To accurately determine the relationship of transportation cost to the farmers' purchasing power, cumulative freight charges on the raw materials used in the manufacture of implements, the freight charges applicable to the movement of the implements themselves to the farm and to the movement of the product of the farm to market, were determined. Likewise, the relationship which the selling price of the raw material, the selling price of the implement, and the price of the farmers' product bore to the number of units of farm production necessary during the various periods to purchase the implements.

The freight on the raw material to the steel mills, the freight on the logs to the sawmills, and the freight on the steel and lumber and other necessary commodities to the point of manufacture of the agricultural implements was obtained in detail on the units necessary to produce the implements in their final manufactured state. In this way an accurate analysis was made of the entire freight cost involved in purchasing the agricultural implements by the farmers' unit of production, and gives an accurate insight into the total cumulative freight charges which add and detract in direct relation to his purchasing power.

Charts A106 and A107 and Tables A106 to A115, inclusive, are based upon the premise that the farmer, at the representative producing points, purchases his agricultural implements f. o. b. the factory at Moline, Ill., a fairly representative implement-manufacturing point, and, furthermore, purchases them with the products of the farm—viz, corn and wheat. The price of corn and wheat is determined by taking the cash price at Chicago on dates shown and deducting therefrom the freight from the representative producing center, together with a small charge per bushel for country elevator handling.

The purpose of portraying the farmer's purchasing power in this way is to give full consideration to each element of cost and distribution, in a cumulative manner, from the state of the raw material. In this manner each process bears a direct relation to the transaction in its entirety. It should be understood in considering the figures and charts presented in connection with this study that they are presented for the purpose of showing the effects upon the farmer's purchasing power of an out-of-line condition between the price received by the farmer for his products and the price which

Digitized by Google

he has to pay for farm implements and the cost of transportation. The number of bushels of wheat or corn required to purchase a given article or to buy a given amount of transportation depends upon the relation between the price of wheat or corn and the price of the article purchased and the price of transportation. As the price of wheat or corn declines, or as the price of transportation or the price of articles which the farmers have to buy rises, the number of bushels required to pay for the articles or for the transportation increases. The object of the charts and tables presented in this study is to demonstrate this fact. In order to bring facts out sharply it was necessary to take cases representing extremes more or less. For instance, Culbertson, Nebr., is located in the western part of the corn belt and represents a rather extreme situation, as does Oklahoma City and Fargo, N. Dak., whereas Springfield, Ill., is located close to both the terminal market for wheat and corn and the point of production of farm implements. Oklahoma City and Culbertson, therefore, represent one extreme and Springfield the other. It should also be remembered that farm implements in question are not purchased by each farmer every year and that their life extends over a varying period of years, so that each farmer is not affected by the situation presented to the full extent indicated by these charts and tables.

Four typical implements have been used in this analysis, viz, a gang plow, weight 738 pounds; a farm wagon, weight 1,200 pounds; a grain binder, weight 1,950 pounds; and a corn binder, weight 1,880 pounds. Table A106 shows the cost of these four implements at representative points, 1913 to 1922. Table A107 shows freight on the raw material from the mine and the forest to the implement factory and freight on the four finished implements from the factory to the respective points, together with the percentage of increase over 1913. Table A108 shows the price of corn and wheat (Chicago market) on dates specified, 1911 to 1922, inclusive. Table A109 shows the number of bushels of corn required to purchase the implements at points indicated, 1913 to 1922. It will be noted from this table that 716 bushels of corn were required to purchase these four typical implements at Springfield, Ill., August 1, 1913, while on August 1, 1917, it required but 256 bushels of corn to make the same purchase. During this four-year period there was an increase of approximately 30 per cent in the price of the implements; no increase in the transportation costs, but an increase in the price of corn from 68½ cents per bushel to $2.31 per bushel, Chicago market, thus requiring a less number of bushels to make the purchase.

Digitized by Google

TABLE A106.—*Cost to farmer of a gang plow, farm wagon, grain binder, and corn binde. at representative corn and wheat producing points for specified periods 1913–1922, and per cent of increase in cost over 1913.*

Location.	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.
Springfield, Ill	$441.00	$446.00	$446.00	$485.00	$572.00	$764.50
Per cent over 1913		1	1	10	30	73
Oklahoma City, Okla	484.50	484.50	485.50	527.00	611.00	813.00
Per cent over 1913			21	9	26	68
Goodland, Kans	490.50	490.50	490.50	532.00	615.50	819.50
Per cent over 1913				8	26	67
Culbertson, Nebr	485.00	485.00	486.00	523.75	613.50	816.25
Per cent over 1913			21	8	26	68
Fargo, N. Dak	469.50	469.50	470.50	511.00	596.00	795.00
Per cent over 1913			21	9	27	69

Location.	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Springfield, Ill	$786.50	$874.50	$820.00	$700.00	$699.50
Per cent over 1913	78	98	86	59	59
Oklahoma City, Okla	838.00	934.50	867.00	751.00	749.50
Per cent over 1913	73	93	79	55	55
Goodland, Kans	845.00	944.00	875.50	761.00	759.00
Per cent over 1913	72	92	78	55	55
Culbertson, Nebr	840.00	936.50	871.00	738.00	736.00
Per cent over 1913	73	93	80	52	52
Fargo, N. Dak	809.00	910.00	841.50	726.50	725.50
Per cent over 1913	72	94	79	55	55

TABLE A107.—*Freight costs of a gang plow, farm wagon, grain binder, and corn binder, 1913–1922 and per cent increase over 1913.*

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.
Springfield, Ill.:						
Material, f. o. b. Moline	$32.85	$32.85	$33.62	$33.93	$37.23	$48.00
Implements, f. o. b. Springfield	6.64	6.64	6.64	6.64	6.64	8.91
Total	39.49	39.49	40.26	40.57	43.87	56.91
Per cent over 1913	0	0	2	3	11	44
Oklahoma City, Okla.:						
Material, f. o. b. Moline	32.85	32.85	33.62	33.93	37.23	48.00
Implements, f. o. b. Oklahoma City	34.68	34.68	34.68	34.68	34.68	44.64
Total	67.53	67.53	68.30	68.61	71.91	92.64
Per cent over 1913	0	0	1	2	6	37
Goodland, Kans.:						
Material, f. o. b. Moline	32.85	32.85	33.62	33.93	37.23	48.00
Implements, f. o. b. Goodland	40.16	40.16	36.69	41.31	39.86	51.47
Total	73.01	73.01	70.31	75.24	77.09	99.47
Per cent over 1913	0	0		3	6	36
Culbertson, Nebr.:						
Material, f. o. b. Moline	32.85	32.85	33.62	33.93	37.23	48.00
Implements, f. o. b. Culbertson	35.54	35.54	34.33	34.33	35.54	45.82
Total	68.39	68.39	67.95	68.26	72.77	93.82
Per cent over 1913	0	0			6	37
Fargo, N. Dak.:						
Material, f. o. b. Moline	32.85	32.85	33.62	33.93	37.23	48.00
Implements, f. o. b. Fargo	20.23	20.23	20.23	20.23	20.23	25.88
Total	53.08	53.08	53.85	54.16	57.46	73.88
Per cent over 1913	0	0	1	2	8	39

Digitized by Google

TABLE A107.—*Freight costs of a gang plow, farm wagon, grain binder, and corn binder, 1913–1922 and per cent increase over 1913*—Continued.

	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Springfield, Ill.:					
Material, f. o. b. Moline	$48.66	$66.17	$65.60	$65.60	$63.70
Implements, f. o. b. Springfield	8.91	12.19	12.50	12.50	12.14
Total	57.57	78.36	78.10	78.10	75.84
Per cent over 1913	46	98	98	98	92
Oklahoma City, Okla.:					
Material, f. o. b. Moline	48.66	66.17	65.60	65.60	63.70
Implements, f. o. b. Oklahoma City	44.64	60.40	60.40	60.40	58.64
Total	93.30	126.57	126.00	126.00	122.34
Per cent over 1913	38	87	87	87	81
Goodland, Kans.:					
Material, f. o. b. Moline	48.66	66.17	65.60	65.60	63.70
Implements, f. o. b. Goodland	51.47	69.62	69.62	69.62	67.61
Total	100.13	135.79	135.22	135.22	131.31
Per cent over 1913	37	86	85	85	80
Culbertson, Nebr.:					
Material, f. o. b. Moline	48.66	66.17	65.60	65.60	63.70
Implements, f. o. b. Culbertson	45.82	61.91	61.91	61.91	60.09
Total	94.48	128.08	127.51	127.51	123.79
Per cent over 1913	38	87	87	87	81
Fargo, N. Dak.:					
Material, f. o. b. Moline	48.66	66.17	65.60	65.60	63.70
Implements, f. o. b. Fargo	25.88	35.40	35.40	35.40	34.38
Total	74.54	101.57	101.00	101.00	98.08
Per cent over 1913	40	91	90	90	85

TABLE A108.—*Price of corn and wheat (Chicago market).*

	For period—						
	Aug. 1, 1911.	Aug. 1, 1912.	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.
Corn	$0.63⅜	$0.73½	$0.68½	$0.77	$0.80⅜	$0.82½	$2.31
Wheat	.87⅛	1.00⅜	.84¾	.87¾	1.10¾	1.25⅜	2.56

	For period—					
	Aug. 1, 1918.	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 1, 1922.
Corn	$1.65	$1.97	$1.61½	$0.60½	$0.46½	$0.46½
Wheat	2.24	2.96	2.56	1.22½	1.19	1.13½

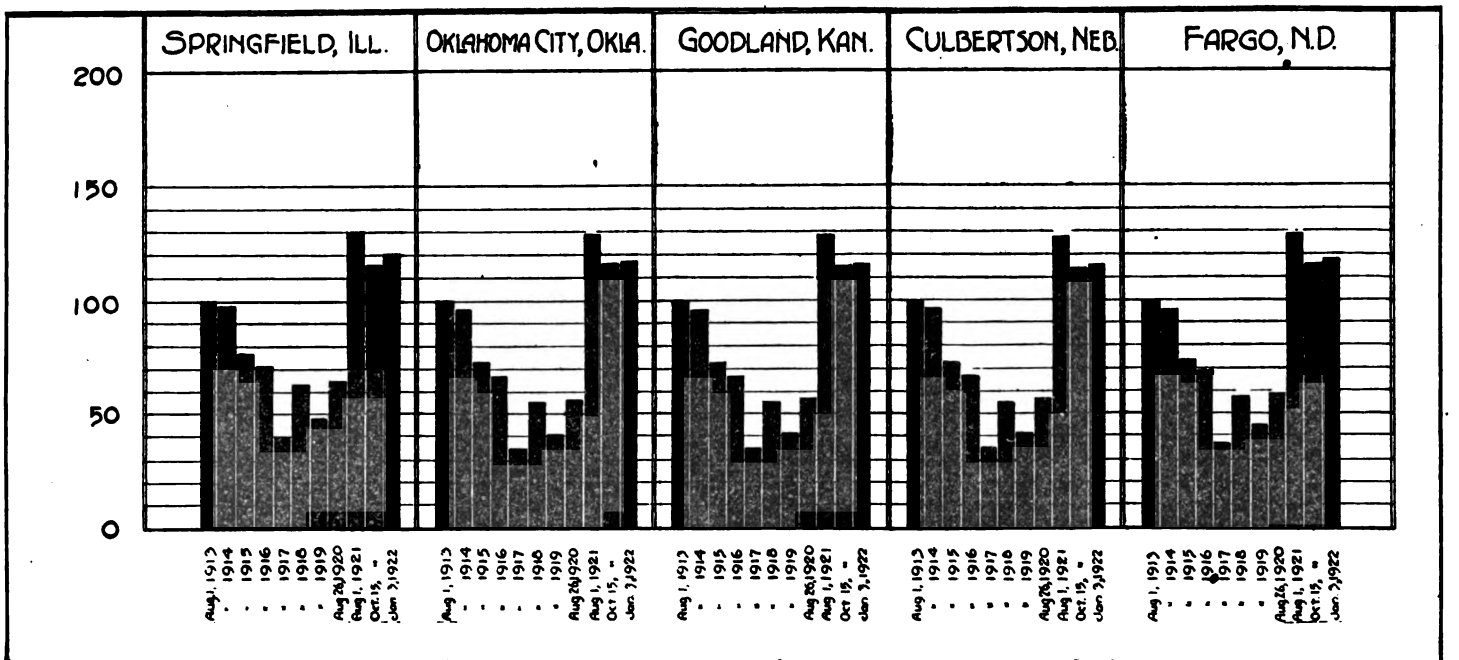
TABLE A109.—*Statement showing the number of bushels of corn required to purchase a farm wagon, gang plow, corn binder, and grain binder manufactured at Moline, Ill., and sold at representative consuming centers for specified periods, 1913–1921.*

Location.	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Springfield, Ill.	716	642	612	647	256	490	418	583	1,600	2,027	1,949
Oklahoma, Okla.	931	800	760	798	284	568	478	702	2,708	4,191	3,143
Goodland, Kans.	928	799	757	796	286	570	480	706	2,704	4,142	3,090
Culbertson, Nebr.	928	797	758	790	285	571	479	704	2,764	4,214	3,087
Fargo, N. Dak.	843	731	696	733	273	532	446	652	2,206	3,009	2,488

Digitized by Google

Chart A 107.

RELATIVE NUMBER BUSHELS OF WHEAT REQUIRED TO PURCHASE FOUR TYPICAL IMPLEMENTS AT REPRESENTATIVE WHEAT-PRODUCING CENTERS, 1913 TO 1922 (1913=100.)

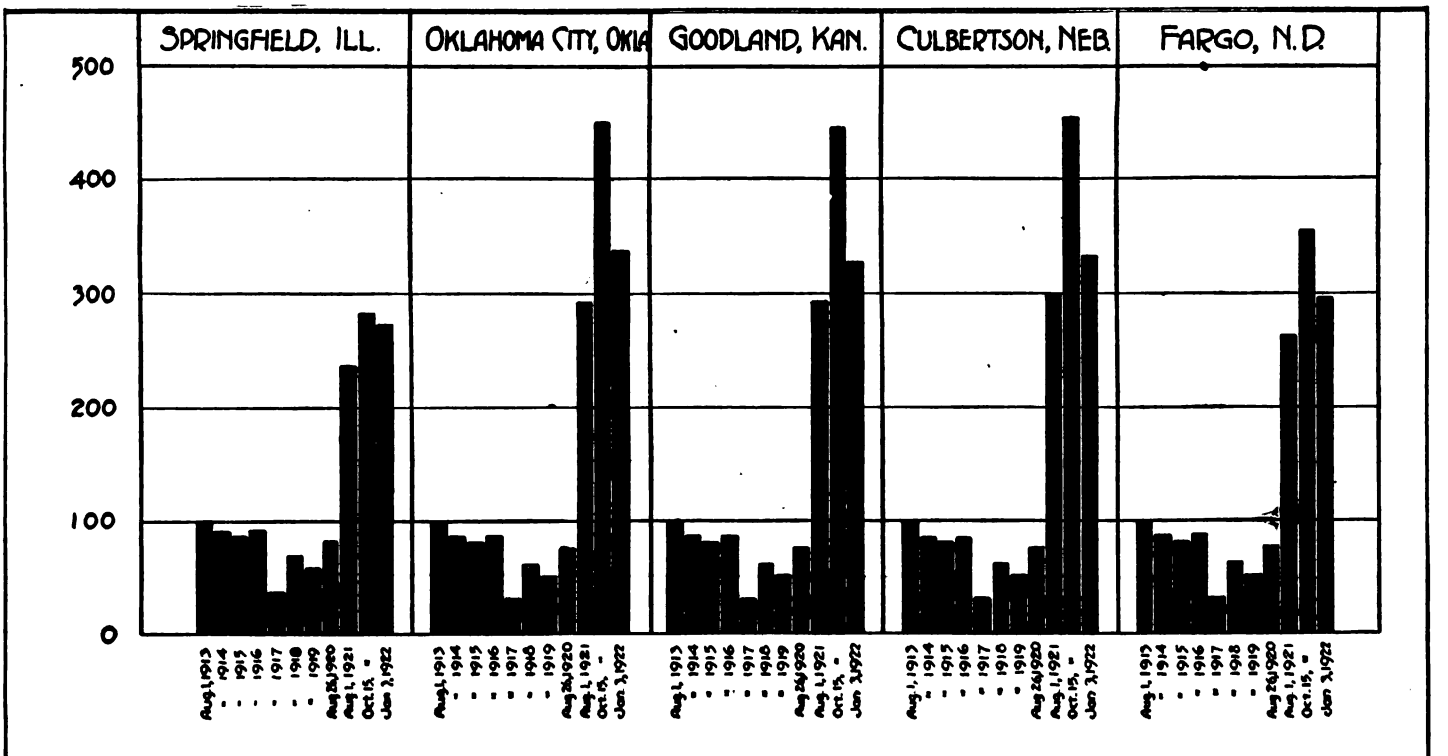


JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

Chart A 106.

RELATIVE NUMBER BUSHELS OF CORN REQUIRED TO PURCHASE FOUR TYPICAL IMPLEMENTS AT REPRESENTATIVE CORN-PRODUCING CENTERS, 1913 TO 1922 (1913=100).



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

On August 26, 1920, with increased freight rates in effect it required a lesser number of bushels than during the period 1913 to 1916 before any of the advances in freight rates became effective. This situation was rapidly reversed, and in 1918 and again in 1920, when the price of corn dropped coincidentally with an increased freight rate, so that on August 1, 1921, with corn at 60¼ cents per bushel, it required 1,690 bushels to make the purchase. Between August 1, 1921, and October 15, 1921, there was a decrease of about 20 per cent in the price of implements, but there was a further decrease in the price of corn until on that date it reached 46¼ cents per bushel, at Chicago, thus increasing the number of bushels required to purchase implements to 2,027 bushels. With corn at 46½ cents January 1, 1922, Chicago market, and the freight rate reduced from 16 to 14½ cents per hundredweight, under orders of the Interstate Commerce Commission, it took 1,949 bushels of corn to complete the transaction.

Springfield, Ill., is located 185 miles from the Chicago market, and is but a short distance from the center of production of agricultural implements and may be properly classified as a representative short-haul point.

Culbertson, Nebr., 790 miles from Chicago, required 928 bushels of corn to make the purchase of said implements August 1, 1913; 285 bushels as of August 1, 1917; 2,764 bushels as of August 1, 1921; 4,214 bushels as of October 15, 1921; and 3,087 bushels as of January 3, 1922.

The actual amount of accumulated freight charges in dollars involved in the purchase of these four typical implements with corn is shown in Table A110. One of these factors, namely, the freight on the crop, is necessarily controlled by the number of bushels of corn, illustrated on previous pages, which are necessary to purchase the four implements involved. It is found that in 1913 it was necessary for the Culbertson, Nebr., farmer to pay $196.24 in freight charges in order to purchase the four implements, while on August 1, 1917, he was required to expend but $112.11 as against $1,233.31 as of October 15, 1921, an increase of over 500 per cent, notwithstanding the fact that there had been a reduction of approximately 20 per cent in the price of the implements between August 1, 1921, and October 15, 1921. The reduction effected by the Interstate Commerce Commission in the western grain rate case, I. C. C. 12929, opinion 7178, reduced this obligation to $746.18 as of January 3, 1922, although there was an advance of but one-fourth of a cent per bushel in the price of corn on the Chicago market.

70678—H. Rept. 408, 67–1, pt 3——12

Digitized by Google

TABLE A110.—*Statement showing the total amount of freight involved in the manufacture and sale of a gang plow, farm wagon, grain binder, and corn binder manufactured at Moline, Ill., and sold at grain producing centers and the sale of corn at Chicago.*

[Raw material moved to Moline, Ill.; implements moved from Moline to producing point; corn, from producing point to Chicago.]

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.
Springfield, Ill.:						
Corn to Chicago	$32.11	$32.35	$30.90	$32.60	$12.91	$32.52
Implements, Moline to Springfield	6.64	6.64	6.64	6.64	6.64	8.91
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	71.60	71.84	71.16	73.17	56.78	89.43
Oklahoma, Okla.:						
Corn to Chicago	130.44	112.13	106.40	111.27	39.89	108.64
Implements, Moline to Oklahoma City	34.68	34.68	34.68	34.68	34.68	44.64
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	197.97	179.66	174.70	180.39	111.80	202.28
Goodland, Kans.:						
Corn to Chicago	122.16	105.23	99.73	104.76	37.66	106.97
Implements, Moline to Goodland	40.16	40.16	36.69	41.31	39.86	51.47
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	195.17	178.24	170.04	180.00	114.75	206.44
Culbertson, Nebr.:						
Corn to Chicago	127.85	109.88	104.39	108.92	39.34	110.39
Implements, Moline to Culbertson	35.54	35.54	34.33	34.33	35.54	45.82
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	196.24	178.27	172.34	177.18	112.11	204.21
Fargo, N. Dak.:						
Corn to Chicago	87.42	75.83	72.19	76.02	28.31	70.79
Implements, Moline to Fargo	20.23	20.23	20.23	20.23	20.23	25.88
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	140.50	128.91	126.04	130.18	85.77	144.58

	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Springfield, Ill.:					
Corn to Chicago	$27.75	$53.90	$155.99	$187.16	$158.30
Implements, Moline to Springfield	8.91	12.19	12.50	12.50	12.14
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	85.32	132.26	234.09	265.26	234.14
Oklahoma, Okla.:					
Corn to Chicago	92.39	182.31	718.51	1,112.06	633.81
Implements, Moline to Oklahoma City	44.64	60.40	60.40	60.40	58.64
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	185.69	308.88	844.51	1,238.06	756.15
Goodland, Kans.:					
Corn to Chicago	90.17	179.30	686.45	1,051.41	578.99
Implements, Moline to Goodland	51.47	69.62	69.62	69.62	67.61
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	190.30	315.09	821.67	1,186.23	710.30
Culbertson, Nebr.:					
Corn to Chicago	92.72	182.80	725.37	1,105.80	622.30
Implements, Moline to Culbertson	45.82	61.91	61.91	61.91	60.09
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	187.20	310.88	852.88	1,233.31	746.18
Fargo, N. Dak.:					
Corn to Chicago	59.23	128.01	432.63	590.16	369.22
Implements, Moline to Fargo	25.88	35.40	35.40	35.40	34.38
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	133.77	229.58	533.63	691.16	467.30

Digitized by Google

In 1913, with corn selling around 50 cents per bushel at Culbertson, Nebr., the farmer paid 13¾ cents per bushel for transportation to Chicago. In 1921, with corn selling around 17½ cents a bushel at Culbertson, Nebr., the transportation charge was 26¼ cents a bushel. In 1913 the carriers' labor cost for transporting this corn was 40 per cent of the total, or 5½ cents per bushel; in 1921 it was 60 per cent of the freight, or 15¾ cents per bushel, which is 1¾ cents per bushel less than the farmer realized for his products, including his summer's labor, the cost of his seed, investment in his land, implements, etc. This situation has been partially corrected by a reduction in the rate on grain effective January 3, 1922, in accordance with I. C. C. docket 12929, opinion 7178, which has had the effect of increasing the price of grain to the farmer from 1½ cents to 6½ cents per bushel, depending upon the distance from the Chicago market.

Table A111 shows the number of bushels of wheat required to purchase the same implements at points specified for the same period, 1913 to 1922. While this table shows a rapid reduction in the purchasing power of wheat, the reduction is much less radical than in the case of corn.

TABLE A111.—*Statement showing the number of bushels of wheat required to purchase a gang plow, farm wagon, grain binder, and corn binder, manufactured at Moline, Ill., and sold at grain-producing centers, and sale of wheat at Chicago.*

Location.	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Springfield, Ill.....	569	558	433	412	230	356	274	359	744	656	683
Oklahoma, Okla.....	736	704	529	495	257	404	303	414	946	852	861
Goodland, Kans.....	739	707	531	497	259	406	309	417	943	851	860
Culbertson, Nebr.....	735	704	529	492	258	406	307	414	947	834	846
Fargo, N. Dak.....	659	633	484	457	245	383	289	391	850	760	777

Table A112 shows the accumulative freight charges involved in the purchase of the four typical farm implements with wheat.

TABLE A112.—*Statement showing the total amount of freight involved in the manufacture and sale of a farm wagon, gang plow, corn binder, and grain binder manufactured at Moline, Ill., and sold at grain-producing centers, and the sale of wheat at Chicago.*

[Raw material moved to Moline, Ill.; implements move from Moline to producing point; wheat, from producing point to Chicago.]

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.
Springfield, Ill.:						
Wheat to Chicago.....	$27.33	$30.17	$23.41	$22.29	$12.45	$25.36
Implements, Moline to Springfield....	6.64	6.64	6.64	6.64	6.64	8.91
Raw material to Moline.....	32.85	32.85	33.62	33.98	37.23	48.00
Total.....	66.82	69.66	63.67	62.86	56.32	82.27
Oklahoma, Okla.:						
Wheat to Chicago.....	121.59	116.27	87.30	81.68	42.55	83.81
Implements, Moline to Oklahoma City.	34.68	34.68	34.68	34.68	34.68	44.64
Raw material to Moline.....	32.85	32.85	33.62	33.98	37.23	48.00
Total.....	189.12	183.80	155.60	150.29	114.46	176.45

Digitized by Google

TABLE A112.—*Statement showing the total amount of freight involved in the manufacture and sale of a farm wagon, gang plow, corn binder, and grain binder manufactured at Moline, Ill., and sold at grain-producing centers, and the sale of wheat at Chicago*—Continued.

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.
Goodland, Kans.:						
Wheat to Chicago	$117.54	$112.46	$84.46	$79.09	$41.24	$81.72
Implements, Moline to Goodland	40.16	40.16	36.67	41.31	39.86	51.47
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	190.55	185.47	154.77	154.33	118.33	181.19
Culbertson, Nebr.:						
Wheat to Chicago	120.54	115.41	86.65	80.59	42.38	84.17
Implements, Moline to Culbertson	35.54	35.54	34.33	34.33	35.54	45.53
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	188.93	183.80	154.60	148.85	115.15	177.70
Fargo, N. Dak.:						
Wheat to Chicago	73.25	70.28	53.75	50.73	27.29	54.39
Implements, Moline to Fargo	20.23	20.23	20.23	20.23	20.23	25.88
Raw material to Moline	32.85	32.85	33.62	33.93	37.23	48.00
Total	126.33	123.36	107.60	104.89	84.75	128.33

	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Springfield, Ill.:					
Wheat to Chicago	$19.52	$35.50	$73.64	$64.93	$58.49
Implements, Moline to Springfield	8.91	12.19	12.50	12.50	12.14
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	77.09	113.86	151.75	143.03	135.33
Oklahoma, Okla.:					
Wheat to Chicago	62.80	115.13	269.20	242.46	206.73
Implements, Moline to Oklahoma City	44.64	60.40	60.40	60.40	58.64
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	156.10	241.70	395.20	368.46	329.07
Goodland, Kans.:					
Wheat to Chicago	62.19	113.43	256.48	231.63	198.22
Implements, Moline to Goodland	51.47	69.62	69.62	69.62	67.61
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	162.32	249.22	391.70	366.85	327.53
Culbertson, Nebr.:					
Wheat to Chicago	63.71	115.39	265.83	234.17	202.06
Implements, Moline to Culbertson	45.82	61.91	61.91	61.91	60.09
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	158.19	243.47	393.34	361.68	326.85
Fargo, N. Dak.:					
Wheat to Chicago	41.15	82.21	178.55	159.82	137.63
Implements, Moline to Fargo	25.88	35.40	35.40	35.40	34.38
Raw material to Moline	48.66	66.17	65.60	65.60	63.70
Total	115.69	183.78	279.55	260.82	235.71

In 1913, a farmer at Goodland, Kans., would have paid $190.55 in cumulative freight charges in exchanging wheat for these necessary farm tools, while at the peak, August 1, 1921, this amount had increased to $391.70.

Since August 1, 1921, there has been a decrease of approximately 20 per cent in the price of implements; a reduction of 6 cents per hundredweight (or 3½ cents per bushel) in the freight rate on wheat from Goodland to Chicago, and with the Chicago price of wheat 9

Digitized by Google

cents less on January 1, 1922, than on August 1, 1921, the Goodland farmer's outlay for freight was $327.53. Any reduction in freight rates on grain is reflected in an increased price for the grain at the country elevator, this increased price varying in accordance with distance from the primary market.

Chart No. A106 is illustrative of Table A110 showing the relative number of bushels of corn required to purchase the four typical implements at Springfield, Ill.; Oklahoma City, Okla.; Goodland, Kans.; Culbertson, Nebr., and Fargo, N. Dak., on dates specified.

Chart No. A107 shows the relative number of bushels of wheat required to make a similar purchase at the same towns and periods as shown in Table A111.

All of the farmers' requirements of implements, merchandise, groceries, etc., are not ordinarily secured by an exchange of one or two commodities such as corn or wheat raised on the farm. It is a well-known fact that less than 20 per cent of the corn raised by the farmer reaches market as corn. A study has therefore been made to determine freight cost involved in the purchase of the farm implements mentioned with hogs at Culbertson, Nebr.

Table A113 shows the price of corn and price of hogs (Chicago market).

TABLE A113.—*Price of corn and hogs (Chicago market).*

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.
Corn, per bushel	$0.68½	$0.77	$0.80⅜	$0.82½	$2.31	$1.65
Hogs, per hundredweight	8.86	8.69	6.88	9.58	15.62	19.05

	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 1, 1921.	Jan. 3, 1922.
Corn, per bushel	$1.97	$1.61½	$0.60¼	$0.46¼	$0.46½
Hogs, per hundredweight	22.15	14.45	10.55	7.60	7.20

Table A114 gives the number of pounds of hogs (live weight) required to purchase the four typical implements at Culbertson, Nebr., and the freight on hogs to Chicago.

Digitized by Google

TABLE A114.—*Statement showing the number of pounds of hogs (live weight) required to purchase the four typical farm implements at Culbertson, Nebr.*

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Hogs (live weight), pounds	5,780	5,900	7,581	5,749	4,049	4,414	3,890	6,840	8,896	10,557	11,134
Freight to Chicago	$27.09	$27.65	$35.53	$26.94	$18.97	$24.55	$21.63	$51.43	$66.89	$79.38	$65.13

Digitized by Google

Table A115 gives the number of bushels of corn required to purchase the four typical farm implements at Culbertson, Nebr., the value of the corn at Culbertson, the total freight costs required to transport the corn to market at Chicago, and the ratio the freight cost bears to the value; the value of the corn converted into hogs, the freight on hogs to Chicago, and the ratio of freight cost to value.

The ratio of the freight cost to the value of corn during pre-war years ranged from 26.4 per cent in 1913 to 6.4 per cent in 1917, the decrease being due entirely to an increase in the value of the corn, there being no change in the freight rates. During the years 1918, 1919, and 1920, although advances had been made in the freight rates, the price of corn remained high and the ratio of freight cost to value did not reach the pre-war level. The decline in prices which set in during 1920 and the freight increases of that year are clearly reflected in the rapidly mounting ratio of 83.3 per cent August, 1921, and 149.8 per cent on October 15, 1921, when the price of corn at Culbertson reached the low level of 17.5 cents per bushel with the freight cost to the Chicago market 26.2 cents per bushel. On January 3, 1922, the price of corn advanced to 24.6 cents per bushel and the freight cost had decreased to 20.1 cents per bushel, the ratio of the freight cost to the value of the corn being 84.6 per cent.

To indicate the condition if the farmer had fed his corn to hogs and shipped the hogs to the Chicago market, the amount of corn required to purchase the four typical farm implements has been converted into hogs at the accepted ratio of 1 bushel of corn to 10 pounds of hogs. (See Table A115.) It will be noted that the ratio of the freight cost to move the hogs to the Chicago market to the value of the hogs at Culbertson was 5.6 per cent in 1913 and 3.1 per cent in 1917, rising from 2.6 per cent in 1919 to 11 per cent on October 15, 1921, and receding to 8.8 per cent on January 3, 1922, the decrease since October 15, 1921, being wholly due to the reduction in the freight rate.

This clearly indicates the advantage from the standpoint of transportation costs in shipping hogs instead of corn.

Digitized by Google

TABLE A115.—*Statement showing the amount of hogs (live weight) and its value at Culbertson, Nebr., resulting from the conversion of the amount of corn required to buy the four typical farm implements at the ratio of 1 bushel of corn to 10 pounds of hogs (live weight).*

	Aug. 1, 1913.	Aug. 1, 1914.	Aug. 1, 1915.	Aug. 1, 1916.	Aug. 1, 1917.	Aug. 1, 1918.	Aug. 1, 1919.	Aug. 26, 1920.	Aug. 1, 1921.	Oct. 15, 1921.	Jan. 3, 1922.
Corn, bushels	928	797	758	790	285	571	479	704	2,764	4,214	3,087
Value at Culbertson, Nebr	$485.00	$485.00	$496.00	$523.75	$613.50	$816.25	$840.00	$936.50	$871.00	$738.00	$736.00
Freight to Chicago	$127.85	$109.88	$104.39	$108.92	$39.34	$110.39	$92.72	$182.80	$725.37	$1,105.80	$822.39
Ratio freight cost to value, per cent	26.4	22.7	21.5	20.8	6.4	13.5	11.0	19.5	83.3	149.8	84.6
Hogs (live weight) out of corn, pounds	9,280	7,970	7,580	7,900	2,850	5,710	4,790	7,040	27,640	42,140	30,870
Value at Culbertson, Nebr	$778.59	$655.13	$485.87	$719.69	$431.77	$1,055.77	$1,034.16	$963.77	$2,705.95	$2,886.59	$2,040.50
Freight to Chicago	$43.49	$37.35	$35.52	$37.02	$13.36	$31.75	$26.64	$52.94	$207.85	$316.89	$180.58
Ratio freight cost to value, per cent	5.6	5.7	7.3	5.1	3.1	3.0	2.6	5.4	7.7	11.0	8.8

Digitized by Google

In 1921 the average carload of corn weighed 77,000 pounds, which, at the current freight rate from Culbertson, Nebr., to Chicago, yields revenue to the carrier of $277.20 per car. The average carload of hogs weighs 19,000 pounds, and at the current rate of 58.5 cents per hundredweight from Culbertson to Chicago yields $111.15 per carload. The value of the carload of corn f. o. b. Culbertson on January 3, 1922, was $338.93; the value of the carload of hogs on the same date was $1,255.90.

Agricultural implements require varied types of equipment for their transportation—standard box cars, automobile, furniture, gondola, and flat cars, all being used to a greater or less degree. Approximately 85 per cent of their movement is in carloads as against 15 per cent in less than carloads, and these carloads are generally from factories to distributing centers located in the various agricultural regions. The movement is more or less seasonal in its nature and largely from these manufacturing centers direct to the farming districts and in the direction of light loads, thus supplying cars for the hauling of agricultural products and aiding the carriers in the distribution of cars for this purpose. There is a large movement of repair parts by parcel post and express. There are few claims for loss and damage; the records of the American Railway Association showing that the percentage of these claims aggregate less than 1 per cent of total claims paid by the rail carriers.

ORE, COKE, PIG IRON, IRON, AND STEEL.

The farmers of the United States purchase annually a considerable quantity of steel. This is purchased in various forms—in tractors, agricultural implements, motor trucks, passenger automobiles, barbed wire, nails, fencing, roofing, etc. The agricultural interests are therefore vitally interested in steel production and the relation of transportation to steel prices. In order to comprehend conditions applying to the iron and steel industry, a few outstanding facts will afford a useful background. It is estimated that this basic industry has an invested capital of approximately $5,500,000,000 and a steel-ingot capacity of more than 45,000,000 gross tons annually, which represents practically half the capacity of the entire world. Chart A108 shows production of these commodities in the United States for the period 1913 to 1921, inclusive.

Table A116 shows the shipments of iron ore from the mines during 1913 and 1920 and preliminary figures for 1921. Data for the years 1920 and 1921 are shown for producing States and groups of States. In a certain sense the report of shipments of iron ore is a better guide to business conditions in the industry and to traffic conditions than the statement of the amount of ore mined. At the outset the compactness of the product makes it possible to load it heavily in open-top cars. The material commonly moves in train loads. The great bulk of the ore comes from the Lake Superior region and receives quick and efficient handling in loading from upper docks into holds of the vessels on the lakes and unloading from the ships to lower docks previous to shipment to interior blast furnaces.

Digitized by Google

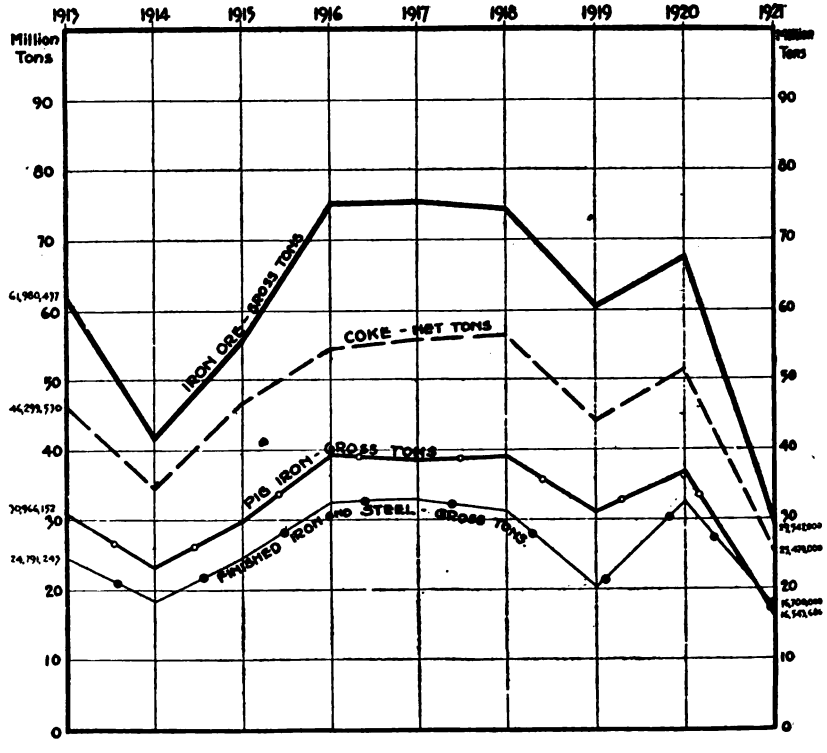
TABLE A116.—*Ore shipped, gross tons.*

District.	1913	1920	1921, preliminary.
Minnesota		39,747,594	18,056,000
Michigan		18,862,578	4,961,000
Wisconsin		1,067,159	118,000
Total, Lake Superior	49,947,116	59,677,331	23,155,000
Alabama		5,833,317	2,875,000
Other southeastern [1]		869,413	71,000
New York and New Jersey		1,376,508	262,000
Pennsylvania		719,813	182,000
Western States [2]		740,537	429,000
Other States [3]		64,422	35,000
Total	50,643,098	69,281,341	27,009,000

[1] Georgia, North Carolina, Tennessee, Virginia.
[2] Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Washington, Wyoming.
[3] Connecticut, Maryland, Massachusetts, Missouri.

Chart A 108.

PRODUCTION IN UNITED STATES OF IRON ORE, COKE, PIG IRON, FINISHED IRON AND STEEL, 1913–1921.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

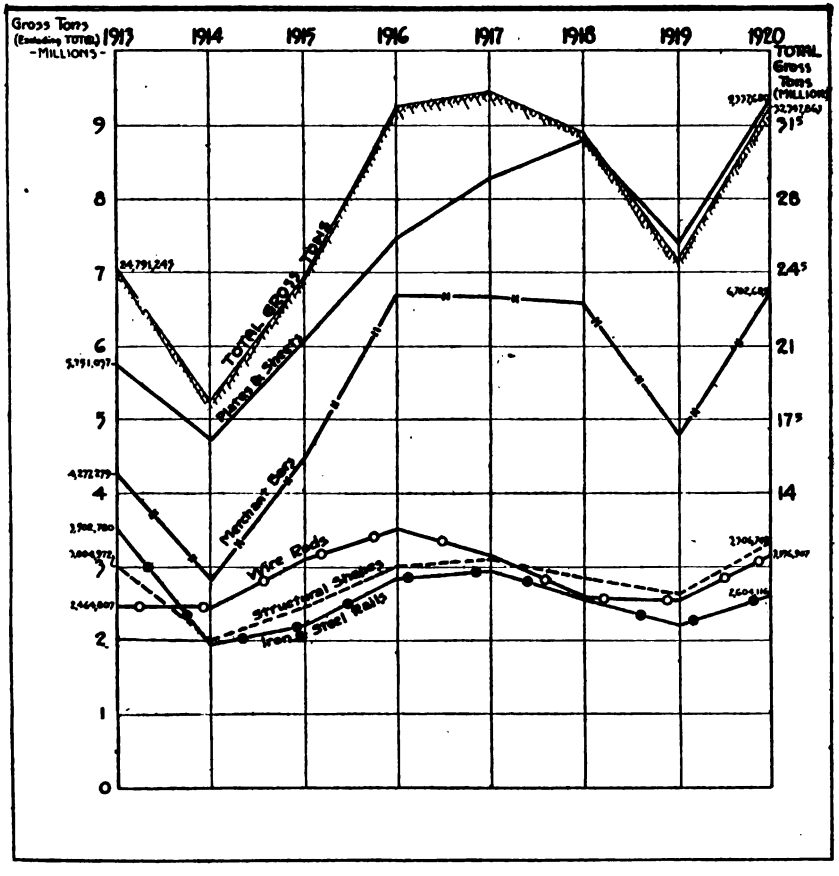
The year 1918 witnessed the heaviest production of coke, when the total slightly exceeded 56,000,000 tons. This has been reduced during 1921 to a trifle over 25,000,000 tons.

Digitized by Google

The necessity of the Government during the war for materials and chemicals used in the manufacture of munitions prompted it not only to encourage but to compel steel companies in various parts of the United States to build additional by-product coke ovens, with the result that after the armistice we had a larger number of

Chart A 109.

PRODUCTION OF PRINCIPAL KINDS OF FINISHED ROLLED IRON AND STEEL, 1913–1920.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

by-product coke ovens than were needed in the year 1921. It is estimated that, in comparison with the beehive ovens, 55 per cent of our coke is produced in by-product coke ovens and 45 per cent in beehive ovens. The by-products of by-product coke plants are used in part in the manufacture of commercial fertilizer, and the use of these by-products for this purpose should be encouraged.

The Pittsburgh district is relatively the greatest producer of pig iron, as it is of steel. The greatest production of pig iron and ferro-alloys was 39,434,797 gross tons in 1916. The production for 1921

Digitized by Google

shows 16,543,686 gross tons, but this figure does not include charcoal pig iron, which is rather a negligible quantity.

The greatest annual steel output in the history of this industry in this country was in 1917, when it was 45,060,607 tons of steel ingots and steel castings. The latter is a foundry product, whose output in 1917 totaled 1,441,407 tons.

A careful estimate of the steel-ingot production for 1921 indicates an output approximating 19,982,000 gross tons. This production is the lowest during the eight-year period preceding 1921. The output of steel castings for 1921 is estimated at 600,000 tons; also, the lowest figure for this line of production during the corresponding period. It will be readily seen from these statistics that the steel-ingot and steel-castings production of 1921 was approximately but 35 per cent of the capacity. There was a large increase in capacity during the war period, particularly in plate-mill output for shipbuilding; but figures not being available as to the percentage of increase, we can not make a percentage comparison of 1921 output as related to capacity with a prewar year, such as 1913.

The total for 1921 was the lowest for the period covered, while 1917 also shows as the highest.

Chart A109 shows in detail the production of finished iron and steel classified for the years 1905 to 1920, and not only strikingly illustrates the trend of output but also reflects the varying production and consumption of the different classified products.

The heaviest exports of steel were in 1917, due largely to war shipments. Exports for 1921 were approximately 33⅓ per cent of the 1917 export. The exports for 1921 were approximately 6 per cent of the finished capacity of the steel mills. The trade estimates that in order to maintain capacity operations export shipments must be materially increased.

It is a general custom in selling steel to name a price f. o. b. Pittsburgh, plus the freight rate Pittsburgh to destination.

The iron and steel industry is at present suffering from one of the worst depressions in its history. Conditions are undoubtedly improving and have been for some months. While the process is slow, the producers are of the opinion that it is of a permanent character. The rise and fall of prices during the period 1913–1921 is plainly indicated by Table A117, reflecting composite average prices for pig iron, finished steel, soft steel bars, plates, beams, and standard rails. The steel trade, whether the barometer of the general markets or only one of the elements, responded to general economic conditions. The tables show conclusively that the iron and steel industry has gone through a sharp period of deflation and liquidation and to-day is selling some products at less than the 1913 average price. Using 100 as the index number for that year, it will be seen that on February 15, 1922, pig iron took the index number 122.7; finished steel, in eight leading lines, representing 88 per cent of the finished output, took the index number 120.5; steel bars, 90.3; plates, 93.3; wire nails, 141.1; and steel rails, 142.8. The index figure on some 327 commodities for the year 1921 is 153, as compared with agricultural products index figure of 120 for the same period, according to Bureau of Statistics, Department of Labor.

Digitized by Google

TABLE A117.—*Average prices of iron and steel products.*

Iron prices.	1913	1914	1915	1916	1917	1918	1919	1920	1921	Feb. 15, 1922.
Composite pig, dollars per gross ton [1]	14.68	12.87	13.54	19.43	36.11	33.24	28.97	42.76	22.58	18.02
Composite price of finished steel,[2] cents per pound	1.663	1.434	1.534	2.671	4.188	3.542	3.115	3.675	2.532	2.005
Soft steel bars at Pittsburgh, cents per pound	1.55	1.15	1.31	2.67	3.63	2.89	2.50	3.22	1.87	1.40
Tank plates at Pittsburgh, cents per pound	1.50	1.14	1.31	3.53	5.88	3.24	2.72	3.28	1.93	1.40
Beams at Pittsburgh, cents per pound	1.50	1.15	1.30	2.55	3.67	2.99	2.53	2.95	1.94	1.40
Wire nails at Pittsburgh, dollars per keg of 100 pounds	1.70	1.56	1.67	2.53	3.52	3.50	3.41	4.09	2.96	2.40
Steel rails at mill,[3] dollars per gross ton	28.00	30.00	30.00	34.00	40.00	57.00	49.29	54.38	45.69	40.00

[1] Quotations on foundry and basic pig irons; basic iron at Valley furnace; foundry iron an average of Chicago, Birmingham, and Philadelphia.

[2] Quotations on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe, and black sheets, constituting 88 per cent of the United States output of finished steel.

[3] Bessemer rails to end of 1913; open-hearth rails from beginning of 1914. The extra $2 per gross ton which has for many years been charged for open-hearth rails was annulled with the new rail price announced Oct. 22, 1921.

The present period of deflation and liquidation began in September, 1920, and the market came so near to a collapse in 1921 that during 1921 prices declined more than 50 per cent, and demand at the low point in that year did not exceed 20 per cent, while the average production was approximately 35 to 40 per cent. This compares with a rate of production of about 70 per cent following the depression of 1907, and of about 85 per cent following that of 1903. Profits have disappeared in many lines and losses are being suffered and have made wage reductions necessary, so that the steel worker has participated fully in the reductions of wages in 1921, which averaged 46 per cent under the preceding year. In October, 1918, the semimonthly wage in iron and steel plants averaged $71.67 per man. This figure gradually declined until in July, 1919, it was $60.35. The active year of 1920 brought wages up until in October of that year they averaged $80.24. The decline since then has been sustained, reaching low points in July and September, just as demand for steel reached its low point during those months. Wages then were about $40, while a recovery to $42.56 was made in November, 1921, and the average has been virtually stationary since then. It is estimated that the decline in wages and other economies have reduced the cost of production about 35 per cent, while selling prices in 1921 fell about 50 per cent.

Sufficiently accurate figures were not obtainable by this commission to make a fair estimate of the freight charges on the raw materials necessary for making a ton of steel. One of the difficulties found was that these freight charges vary in various parts of the country, and may fluctuate in the same district, because of the distance from which the raw materials come, the manufacturer of steel

Digitized by Google

often preferring a certain kind of coal or ore, and in the production of steel sometimes disregards the distance these raw materials must be moved. Tabulations made from information gathered show the variations in freight charges to be from $11.50 to $13.75 per ton on the raw material entering into the manufacture of a ton of finished steel, these costs being illustrative of Chicago, Youngstown, and Pittsburgh districts. Figures from the Birmingham district were not available, but on account of the short distance which the Birmingham steel manufacturer moves his raw materials and the consequently lower freight costs, the figures above used would doubtless be high in estimating the freight charges on the raw materials necessary to the production of a ton of finished steel in the Birmingham district. Colorado figures were likewise not available.

Table A118 is illustrative of the increase in freight on ore, coal, coke, limestone, and other commodities used in the manufacture of steel, showing rates in effect in 1913 and 1921, together with percentage of increase.

Table A119 gives a comparison of a few rates from Mahoning and Shenango Valley districts to certain points (in effect in 1913 and 1921, together with percentage of increase) on pig iron, billets, and manufactured iron and steel in the Mahoning and Shenango Valleys.

Table A120 shows carload rates on cast-iron pipe from Birmingham district to a few representative cities, rates in effect as of October 25, 1914, and February 20, 1922. The table also shows the percentage of increase.

Table A121 shows freight costs on 1 ton of Bessemer bars, also 1 ton of open-hearth bars, 1913 to 1920, inclusive, at Youngstown, Ohio.

TABLE A118.—*Freight rates to Mahoning and Shenango Valleys.*

	1913	1921	Per cent increase.
Direct ore:			
Mines to upper lake ports.....gross ton..	$0.60	$1.00	.....
Lower ports to furnaces.....do....	.56	.99½	.....
Total.....do....	1.16	1.99½	72
Dock ore:			
Mines to upper lake ports.....do....	.60	1.00	.....
Lower ports to furnaces.....do....	.64	1.27½	.....
Total.....do....	1.24	2.27½	83.5
Coal:			
From Pittsburgh district.....net ton..	.70	1.50	114.3
From Connellsville district.....do....	.85	1.58	85.9
Coke, from Connellsville district.....do....	1.20	2.52	110
Furnace limestone, from Hillsville and Walford, Pa.....gross ton..	.35	.84	140
Open-hearth limestone, from Martinsburg, W. Va.....net ton..	1.40	2.38	70
Dolomite (roasted), from Kenova, W. Va.....gross ton..	1.45	[1] 3.10	139.44
Dolomite (raw), from Marblehead, Ohio.....do....	.75	1.54	105.3

[1] Net ton.

Digitized by Google

TABLE A119.—*Showing a comparison of freight rates, 1913–1921, of pig iron and articles taking pig iron rates, billets and articles taking billet rates, and manufactured iron and steel articles, from Mahoning and Shenango Valleys.*

To—	Pig iron.			Billets.			Iron and steel.		
	1913, per gross ton.	1921, per gross ton.	Per cent increase.	1913, per gross ton.	1921, per gross ton.	Per cent increase.	1913, per hundredweight.	1921, per hundredweight.	Per cent increase.
New York	$2.85	$6.72	135.8	$3.00	$7.00	133.3	$0.18	$0.42	133.3
Philadelphia	2.65	6.32	138.5	2.80	6.60	135.7	.17	.40	135.3
Baltimore	2.55	6.12	140	2.70	6.40	137	.16½	.39	136.4
Chicago	2.40	5.32	121.7	2.60	5.60	115.4	.16	.35½	121.9
St. Louis	3.00	6.44	114.6	3.30	7.14	116.3	.20½	.42½	107.3
Louisville	2.40	5.32	121.7	2.60	5.60	115.4	.16	.37	131.2
Cincinnati	1.80	4.06	125.5	2.00	4.34	117	.13	.32	146.1

TABLE A120.—*Carload rates on cast-iron pipe from Birmingham, Ala., district.*

To—	Rate Oct. 25, 1914.	Present rate.	Per cent increase.
Boston, Mass	$6.75	$11.20	65.93
New York, N. Y	6.12	10.27	67.81
Philadelphia, Pa	5.32	8.94	68.10
Pittsburgh, Pa	5.18	9.47	82.82
Duluth, Minn	6.15	12.40	101.70
Kansas City, Kans	5.95	11.30	89.92
Omaha, Nebr	5.95	11.30	89.92
Phoenix, Ariz	18.60	30.00	61.29
Atlanta, Ga	2.00	3.13	56.50

TABLE A121.—*Statement showing freight cost in 1913–1921, of 1 ton of Bessemer bars and 1 ton open-hearth bars, at Youngstown, Ohio.*

	1913	1914	1915	1916	1917	1918	1919	1920	1921
Bessemer bars	$6.70	$6.70	$6.90	$6.91	$8.76	$10.08	$10.55	$13.89	$13.34
Open-hearth bars	4.91	4.91	5.04	5.06	6.19	7.41	7.63	10.24	9.92

Numerous examples have been submitted before the Interstate Commerce Commission by iron and steel makers to show that the cost of production in various lines of iron and steel manufacture exceeds the market price. The freight ingredient in a ton of steel is in excess of 40 per cent of the selling price of the finished article, and in the case of pig iron the ratio is still higher. Pig iron being a basic product of the iron and steel industry, its cost is reflected throughout the manufacture of semifinished and also finished steel.

WIRE NAILS, BARBED WIRE, ETC.

Compilations have been made on nails and barbed wire, which are articles in general use on the farm. While a considerable portion, if not most, of the nails and barbed wire used throughout the country are shipped in carloads at much lower rates than shown in the tables, it will be readily seen that the freight on a keg of nails or a bundle

Digitized by Google

of barbed wire is not prohibitive, even though on a higher basis than during the prewar period, as shown in Tables A122 and A123.

A careful analysis demonstrates the truth of the statement that the transportation cost bears little relation to the selling price and that a reduction in rates would not be reflected therein. The average number of cars in daily merchandise service during 1921 was 29,863, and by force of custom this class of service has been given practically full car supply.

TABLE A122.—*Freight rates on wire nails in kegs, less than carloads, in cents per 100 pounds.*

From—	To—	Oct. 1, 1913.	Oct. 1, 1918.	Oct. 1, 1921.
Buffalo, N. Y	Hammondsport, N. Y	$0.11	$0.17	$0.24
New York	New Britain, Conn	.12	.20	.28
Do	Barre, Vt	.21½	.32½	.47
Buffalo, N. Y	Leroy, N. Y	.08	.12	.17
Do	Elmira, N. Y	.10	.17	.24
Pittsburgh, Pa	Salem, Ohio	.06½	.19½	.27½
Do	Bucyrus, Ohio	.15	.29	.40½
Memphis, Tenn	Indianola, Miss	.35	.44	.55
Minneapolis, Minn	Devils Lake, N. Dak	.48	.60	.81
Chicago, Ill	Greeley, Colo	.85	1.06½	1.44
Do	Marshalltown, Iowa	.26	.32½	.44
Do	Indianapolis, Ind	.14	.28	.39½
Do	Aberdeen, S. Dak	.33½	.42	.56½
Do	Grand Rapids, Mich	.12	.20½	.29
Pittsburgh, Pa	New Britain, Conn	.21	.31½	.47
Do	Indianola, Miss	.65½	.76½	1.02

TABLE A123.—*Freight rates on barbed wire, less than carloads, in cents per 100 pounds.*

From—	To—	July 1, 1913.	July 1, 1918.	Nov. 1, 1921.
Buffalo, N. Y	Le Roy, N. Y	$0.08	$0.12	$0.17
Do	Hammondsport, N. Y	.11	.17	.24
New York, N. Y	New Britain, Conn	.13	.24	.33½
Do	Barre, Vt	.21½	.32½	.47
Pittsburgh, Pa	Salem, Ohio	.06½	.19½	.27½
Do	Bucyrus, Ohio	.15	.29	.40½
Buffalo, N. Y	Elmira, N. Y	.10	.17	.24
Memphis, Tenn	Indianola, Miss	.35	.44	.55
Minneapolis, Minn	Devils Lake, N. Dak	.48	.60	.81
Chicago, Ill	Greeley, Colo	.85	1.06½	1.44
Do	Marshalltown, Iowa	.27	.32½	.44
Do	Indianapolis, Ind	.14	.28	.39½
Do	Aberdeen, S. Dak	.33½	.42	.56½
Do	Grand Rapids, Mich	.12	.20½	.29
Pittsburgh, Pa	New Britain, Conn	.21	.31½	.47
Do	Indianola, Miss	.65½	.76½	1.02

BITUMINOUS COAL.

In dealing with the bituminous coal situation as it affects the farmer we must bear in mind that he is directly or indirectly concerned in from 20 to 22 per cent of our annual consumption. The direct interest relates primarily to the amount of coal actually burned on the farm; the indirect interest relates to the coal consumed by the railroads in transporting agricultural products, to coal consumed in the production of steel used by the farmer, either direct or in the manufacture of farm implements, and the coal consumed in the manufacture of other articles required by the farmer.

Digitized by Google

Therefore our production, distribution, transportation, and other intermediate handling costs are deemed sufficiently essential to justify presentation of statistical information, together with comments thereon, to a greater degree than would otherwise be necessary.

Tables A124 and A125 are presented to show the location of the present coal supply and its distribution by general destinations, both by rail and water carriers.

TABLE A125.—*Movement via inland waterways—Destination of cargo coal dumped at Lake Erie ports during the season of 1921, compared with 1919 and 1920.*[1]

	1919		1920		1921	
	Net tons.	Per cent.	Net tons.	Per cent.	Net tons.	Per cent.
merican:						
Lake Superior ports	9,426,000	43.4	9,330,000	41.6	9,908,000	44.2
Sault Ste. Marie and river points	350,000	1.6	563,000	2.5	356,000	1.5
Lake Huron-Georgian Bay ports	303,000	1.4	213,000	0.9	232,000	1.0
Lake Michigan ports	6,680,000	30.7	5,460,000	24.4	6,173,000	27.6
Port Huron and Detroit River	348,000	1.6	846,000	3.8	739,000	3.3
Lake Erie ports	73,000	0.4	65,000	0.3	244,000	1.1
Total American	17,180,000	79.1	16,477,000	73.5	17,632,000	78.7
nadian:						
Lake Superior ports	1,581,000	7.3	1,965,000	8.8	2,006,000	8.9
Sault Ste. Marie and river points	811,000	3.7	1,092,000	4.9	752,000	3.4
Lake Huron-Georgian Bay ports	740,000	3.4	1,006,000	4.5	766,000	3.4
Port Huron and Detroit River	364,000	1.7	443,000	2.0	398,000	1.8
Lake Erie ports	49,000	0.2	10,000	.....	91,000	0.4
Lake Ontario and St. Lawrence River	988,000	4.6	1,415,000	6.3	767,000	3.4
Total Canadian	4,533,000	20.9	5,931,000	26.5	4,780,000	21.3
Grand total	21,713,000	100.0	22,408,000	100.0	22,412,000	100.0

Compiled by Ore & Coal Exchange.

Receipts of coal at Duluth-Superior.

	Hard.	Soft.	Total.		Hard.	Soft.	Total.
tal, season of—				Total, season of—			
1921	1,844,642	8,320,207	10,164,849	1919	1,795,257	7,079,840	8,875,097
1920	1,637,447	7,393,219	9,030,666	1918	1,669,473	9,721,440	11,390,913

Shipments from Duluth and Superior docks in carloads.

Month.	1921	1920	Month.	1921	1920
uary	8,403	35,908	August	20,009	19,906
ruary	8,164	32,202	September	18,735	21,126
rch	7,450	20,177	October	28,722	20,286
ril	5,830	10,400	November	18,276	20,453
y	7,883	8,444	December	[1] 15,000	12,621
e	9,557	10,401			
y	13,448	15,052	Total	161,477	226,976

Estimated.

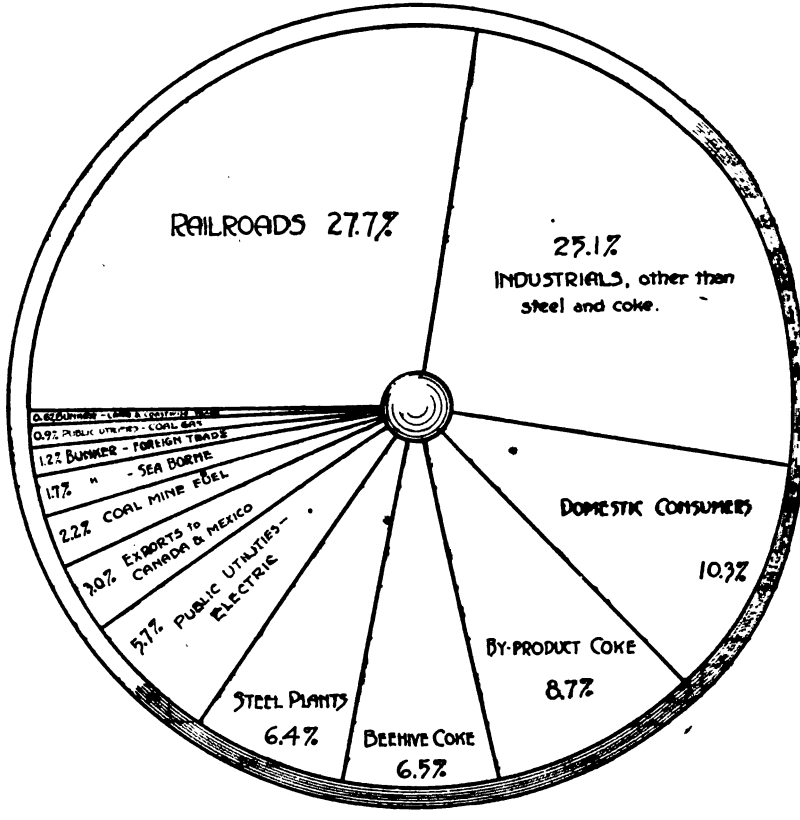
Digitized by Google

Consumers of coal whose requirements necessitate purchase in large volume are able to buy at a lower price than smaller consumers. The railroads can purchase coal at a lower price than most other consumers, while the individual farmer is probably classified among the smallest consumers, and therefore probably pays the higher prices. There is considerable loss in handling coal in small quantities by reason of breakage and shrinkage and this loss is a factor in the final price. Bituminous coal generally comes from the mine

Chart A 110.

DISTRIBUTION OF BITUMINOUS COAL CONSUMPTION BY CLASSES OF CONSUMERS, 1918.

[Data from United States Geological Survey.]

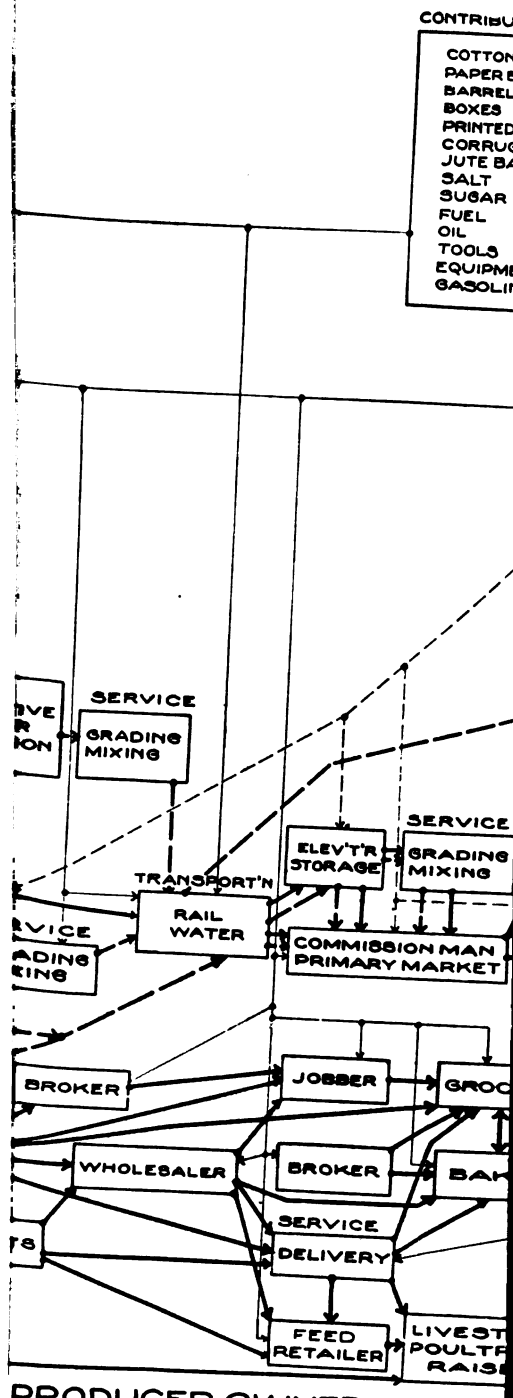


JOINT COMMISSION OF AGRICULTURAL INQUIRY.

mouth in the form of "run of mine," which includes the slack, screenings, and impurities, as well as coal of marketable sizes. It is usually prepared at the mine for the specific use for which it is intended. This preparation for the farmers usually involves the selection of the larger sizes and that coal which is most free from impurities. Necessarily coal so prepared would command a higher price per ton than coal containing all of the impurities as it comes from the mine. Furthermore, the demand for coal from agricultural districts is

Digitized by Google

Digitized by Google

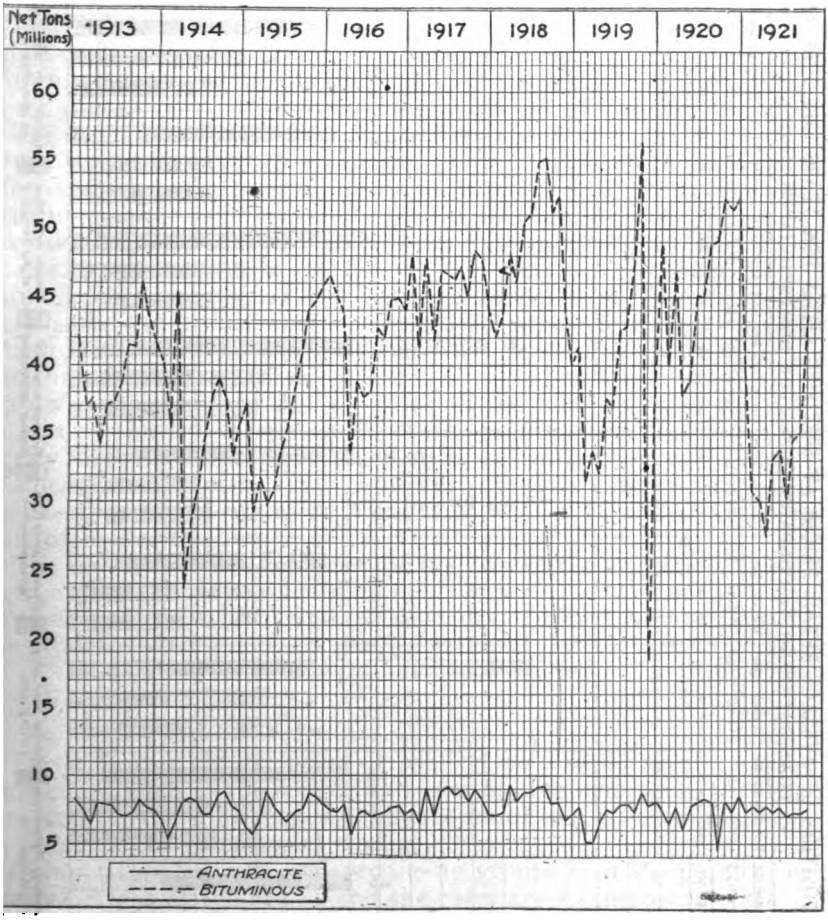


Digitized by Google

easonal and comes at a time usually when the greatest burden is pon the transportation systems and industries generally. Prices n the higher grades of prepared bituminous coal depend conderably upon the demand for the smaller sizes after removing the irger sizes. The demand for this inferior coal is largely from ailroads and industries, and during periods of depression, when

Chart A 111.

ANTHRACITE AND BITUMINOUS COAL PRODUCED IN UNITED STATES, 1913 TO 1921, BY MONTHS, IN NET TONS.



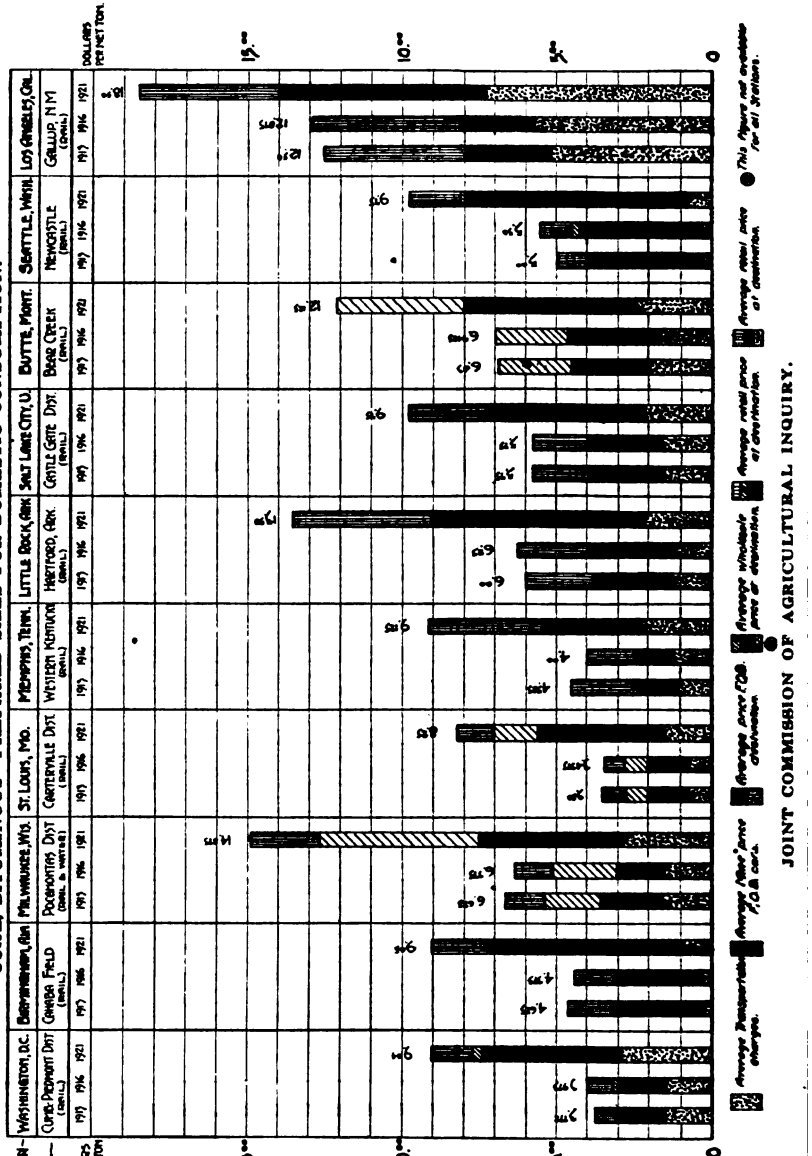
JOINT COMMISSION OF AGRICULTURAL INQUIRY.

al for industrial purposes is substantially restricted, the mine erator not infrequently is compelled, because of inability to disse of low-grade coal, to charge all of his operating cost against e prepared sizes. As mine labor runs against all the coal tonnage it comes from the mouth of the mine, the inability of the mine erator to dispose of low-grade coals is a serious matter to the rmer, as the unsalable low-grade coals or screenings or slack must treated largely as a loss if it can not be sold. Rather than sus-

Digitized by Google

tain a complete loss on this low-grade coal the mine operator usually offers it at prices low enough to attract consumers who would otherwise prefer the use of prepared sizes.

Chart A 112.
COMPOSITION OF AVERAGE RETAIL PRICES AT SPECIFIED CITIES FOR YEARS 1913, 1916, AND 1921.
COAL, BITUMINOUS—PREPARED SIZES FOR DOMESTIC CONSUMPTION.



Charts A110 and A111 graphically illustrate the production and distribution of coal.

Chart A112 illustrates the composition of average retail prices of bituminous coal at specified cities for the years 1913, 1916, and 1921.

Digitized by Google

The effect of increased selling margins, freight costs, and mine prices is clearly illustrated by this chart.

STOCKS OF COMMERCIAL COAL.

In a report issued February 7, 1922, by the Bureau of the Census and the Geological Survey, it is estimated that American consumers had on hand approximately 47,500,000 tons of soft coal on January 1, 1922, or a reserve sufficient for 41 days if evenly divided. This does not include coal in the cellars of domestic consumers concerning which statistics are not available, nor steamship fuel, nor coal on lake docks.

Retail dealers, bituminous.—Like the general industrial consumers, retail coal merchants reported smaller stocks on January 1 than on November 1, two months before. The decrease was marked in nearly every State.

The position of retailer at the beginning of 1922 was midway between that of a year ago and that on January 1, 1919, immediately after the war. In comparison with January 1, 1921, stocks are at present smaller in New England, the Middle Atlantic States, the lake dock territory, and the northern Rocky Mountains and Pacific States, but larger over the rest of the country. At the December rate of delivery to consumers, retailers' reserves on New Year's Day were sufficient to last on the average 33 days. For New England, which usually carries heavy stocks, the reserve averaged 21 days, or less than for the rest of the country.

Coal on upper lake docks.—Coal on the lake docks is treated as in transit, partly because it fluctuates greatly with the season and partly because most of it must still be shipped by rail before it reaches the consumer. It is, however, the dominant element in the fuel reserve of the States of Wisconsin, Minnesota, the Dakotas, and part of northern Iowa.

The movement off the docks during November and December was light and the tonnage remaining on January 1, 1922, was about twice as great as it was a year ago. The stocks of bituminous coal held by the 28 distributing dock companies follows:

	Net tons.
Aug. 1, 1921	8,188,639
Nov. 1, 1921	8,824,297
Jan. 1, 1922	7,150,654

These figures are exclusive of coal on private docks of industrial consumers, such as the copper and iron mining companies of Minnesota and northern Michigan. The stocks of the latter companies are included in the commercial storage.

Competition between coal-producing groups is at the point of consumption, not at the mines, and the rates are an important factor in preserving competition. The quality of the coal is not considered when wages and cost of supplies are increased, and if no question of transportation charges were involved the increase in the cost of production alone would operate to the detriment of the inferior coals. This is a situation that would be difficult, if not impossible, to overcome. With a proper freight-rate adjustment as between competing districts, this condition is best met.

DEALER'S MARGIN.

There are many kinds of dealers, some also engaged in other lines of business and handling commodities other than coal. Some have a

Digitized by Google

considerable investment in plant and facilities and some practically none.

Some coal is sold direct from cars, requiring a limited handling, and much is handled through yards, requiring considerable rehandling and possible rescreening.

There is a loss occasioned by the natural shrinkage in coal and degradation due to breakage in handling, all of which is an expense and is in addition to rent, labor, insurance, interest, and profit.

Haulage or drayage or delivery is an item which may be separately considered and with which the farmer is not concerned, as he usually takes delivery in his own conveyance at the coal yard or at the car.

The dealer's margin over the cost of coal to him is an uncertain and variable quantity.

In many communities more concerns are engaged in handling coal than seems warranted by the requirements of the community or locality. The volume is divided among these many dealers, and no doubt results in increased cost but not necessarily increased profit because of the additional competition.

Table A126 shows the retail price at several consuming points throughout the Northwest, the mine price, the freight rate, and the dealer's gross margin.

TABLE A126.—*Bituminous Coal prices, freight, and retail margins, January, 1922.*

Destination.	Source of supply.	Grade of coal.	Mine price.	Freight rate.	Retail price.[1]	Dealer's margin.[1]
Prophetstown, Ill	Southern Illinois	Prepared coal	$4.05	$2.41	$8.25	$1.79
Augusta, Ill	do	do	4.05	2.36½	7.50	1.08½
Broken Bow, Nebr	Walsenburg, Colo	do	5.00	6.01½	14.00	2.99
Do	Routt County, Colo	do	5.00	6.26½	14.00	2.73½
Rector, Ark	Du Quoin, Ill	do	3.50	3.38	8.75	1.87
Do	Southern Illinois	Nut coal	3.25	3.38	8.50	1.87
De Witt, Ark	Kentucky	Prepared coal	2.30	3.87	7.00	.83
Do	Southern Illinois		3.95	3.92	9.50	1.63
Lincoln, Iowa	do		3.05	3.85	8.50	1.60
Do	Kentucky		3.75	6.27½	10.50	.67½
Lorimor, Iowa	Fulton County, Ill		3.25	3.44½	8.25	1.55½
Do	Iowa		5.00	1.51	8.00	1.49
Columbus Junction, Iowa	Southern Illinois		4.05	2.70	7.75	1.00
Green, Iowa	do		4.05	3.85	9.50	1.60
Do	Kentucky		3.00	6.27½	11.50	2.22½
Hartsburg, Ill	Lincoln, Ill	Lump	3.00	1.22	5.10	.88
Do	do	Nut	2.75	1.22	4.90	.93
Macon, Ill	Pana, Ill	Lump	3.10	1.22	5.40	1.08
Do	do	Nut	2.75	1.22	4.90	.93
Galesville, Wis	Southern Illinois		4.05	3.58	9.25	1.62
Lancaster, Wis	do		4.05	3.71	9.75	1.99
Shullsburg, Wis	do		4.05	3.47	11.00	3.48
Tomah, Wis	do		4.05	3.58	9.50	1.87
Do	West Virginia		3.60	5.54	11.00	1.86
Evansville, Minn	Southern Illinois		4.05	4.99½	11.00	1.95½
Benson, Minn	Southern Illinois (Zeigler)		4.05	4.88½	11.50	2.56½
Do	Southern Illinois (West Frankfort)		4.05	4.88½	11.00	2.06½
Willmar, Minn	Southern Illinois		4.05	4.79½	11.25	2.40½
Mulvane, Kans	Kansas	Lump	5.50	2.43	9.50	1.57
Strong City, Kans	do		5.50	2.43	9.50	1.57
Clarks, Nebr	Rock Springs, Wyo	Lump	4.00	5.86½	11.00	1.13½
Do	do	Nut	3.00	5.20	10.00	1.80
Cozad, Nebr	do	Lump	4.00	5.60	11.00	1.40
Do	do	Nut	3.00	4.93½	10.00	2.06½
Arlington, Minn	Kentucky		3.00	5.80	11.00	2.20
Do	Southern Illinois		4.05	4.25½	10.00	1.69½
Madison, Minn	Kentucky		3.00	6.07	11.50	2.43
Do	Southern Illinois		4.05	4.45½	10.50	1.99½

[1] Does not include drayage or delivery at destination.

Digitized by Google

Table A127 gives the same information for bituminous and anthracite coal, reduced to averages for the periods shown. Typical markets have been selected and the price and transportation cost from the coal-producing districts ordinarily serving these typical markets are given. These figures indicate that the mine price of bituminous coal in 1920–21 increased from 50 to 350 per cent over 1912–13, these being the extremes, the increases generally ranging from 100 to 242 per cent. The wholesale price increased from 54 to 182 per cent and the retail price from 48 to 172 per cent over 1912–13. The transportation cost increased from 20 to 191 per cent, the increase generally ranging from 65 to 90 per cent.

Because of the heavy increase in mine, wholesale and retail prices the ratio of the transportation cost to such prices shows a decrease in 1920–21 under 1912–13, as does also the percentage of the transportation cost of the spread between the average mine price and the wholesale or retail price as the case may be. Although the increase in mine prices and wholesale and retail prices of coal has submerged the increase in transportation costs, the latter is heavy and materially affects the cost to the consumer. The increase in transportation costs over 1912–13 ranges from $1.15 to $2.10 per ton, the heaviest increases being to the more distant markets as the result of the percentage increases of 1918 and 1920.

The increases in prices of anthracite coal in 1920–21 over 1912–13 at the mine range from 80 to 168 per cent, the increases generally being from 100 to 130 per cent. Wholesale prices increased from 102 to 129 per cent and retail prices from 94 to 133 per cent. The increase in transportation costs ranges from 95 cents to $2.68 per ton, and, as in the case of bituminous coal, the heaviest increase is felt by the more distant markets.

The yearly exports, bituminous coal, from the United States, 1916 to 1921, in gross tons, are as follows:

1916	21,254,627	1919	17,987,666
1917	23,829,558	1920	34,269,735
1918	22,300,730	1921	20,660,933

Coal is one of the basic commodities on which railroad transportation, industry, and agriculture are largely dependent, and, because of the substantial interest of the farmer in such a large percentage of our coal production, he is deeply interested in every element of cost. It is, therefore, the conclusion of this commission, that:

(*a*) Wages in the coal industry should be considered in the light of the buying power of the farmer and of the prevailing economic conditions.

(*b*) Transportation charges should be adjusted with due regard to the prevailing conditions.

(*c*) That items of intermediate expense and handling should be reduced to the lowest possible minimum.

(*d*) That duplication of any items of expense intermediate between producer and consumer should be eliminated where such expense can be avoided without unnecessary interference with the broad avenues of distribution now existing.

ANTHRACITE COAL.

Anthracite coal to be burned successfully must be cleaned and prepared by sizes, and differs from bituminous in that it does not con-

Digitized by Google

tain as much volatile matter and is much harder; in consequence, there is less breakage in transit, it is more readily handled, is cleaner, needs less attention when used, and holds the fire longer than bituminous.

Anthracite is always sold at the mine on a gross ton basis (2,240 pounds). In Pennsylvania it is sold at retail on the same basis. Throughout the rest of the United States, with the exception of Washington, D. C., and Baltimore, Md., it is sold at retail on the basis of a net ton (2,000 pounds).

In mining and preparing anthracite for sale, nine sizes are made simultaneously, and it is necessary that they be shipped from the colliery every day in the proportion in which they are produced, as few collieries have any storage capacity. Coal probably moves more rapidly from production to consumption than any other commodity produced; and while it is entirely feasible to store anthracite for later sale, such storage adds materially to the cost through handling, also degradation or breakage, which necessitates rescreening. The screening, sizing, and washing of anthracite at the mine necessitates heavy investment in breakers, power plants, machinery, etc., which materially add to the cost of production. Sixty-nine per cent of the anthracite workers are employed underground as producers, while 81 per cent of all bituminous workers are so employed. The production per man per day in an anthracite mine is little more than one-half of that in a bituminous mine, from which results the higher labor cost of producing a ton of anthracite as compared with bituminous.

Anthracite coal is produced largely for domestic use, over 60 per cent of the total output being thus consumed. Seventy-five per cent of the total output of anthracite is produced by companies designated as the railroad companies, such designation distinguishing them from the independents, who produce the remaining 25 per cent.

Prices of anthracite came under the control of the Government September 1, 1917, when a scale of mine prices was announced by the President, since which date prices have been advanced to offset increased wages, the total advance within 15 months being $1.15 per ton.

The anthracite fields are limited practically to the State of Pennsylvania. The Girard Estate owns about 4 per cent of the supply of anthracite shipped to market. This property was left to the city of Philadelphia in trust by Stephen Girard for the support and maintenance of a school for poor white orphans. The coal mines owned by this estate are operated under leases and have been for the past 50 years. Royalties are paid to the estate on a sliding scale, based upon the selling price received by the producing company. The average Girard royalty rate for 1921 was $1.04 per ton, while the average selling price at the mine for all sizes for 1915 to 1920 by the companies mining under Girard leases were as follows:

1915	$2.72	1917	$3.85	1919	$5.44
1916	3.02	1918	4.63	1920	6.51

Rates on anthracite coal have advanced approximately 85 per cent under the operation of general order 28 and Ex parte 74. Prior to the war New England rates, based on a combination of rail to tidewater and tide to New England, were approximately $2.10 against

Digitized by Google

the all-rail rate of $3, but since the war the combination rate, rail-and-water, has been $6, approximately the same as the all-rail rate.

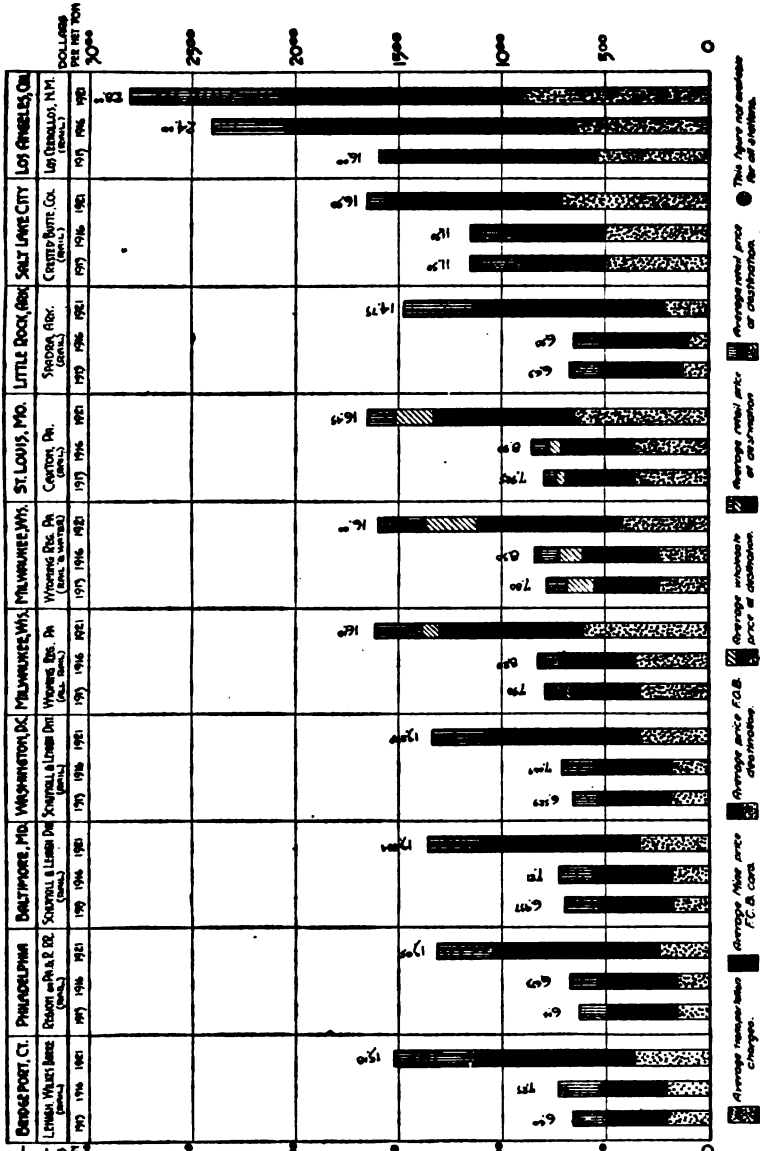


Chart A 113.
COMPOSITION OF AVERAGE RETAIL PRICES AT SPECIFIED CITIES FOR YEARS 1913, 1916, AND 1921.
COAL, ANTHRACITE, STOVE—FOR DOMESTIC CONSUMPTION.
DESTINATION →
ORIGIN ← DOLLARS PER NET TON
BRIDGEPORT, CT.
PHILADELPHIA
BALTIMORE, MD.
WASHINGTON, D.C.
MILWAUKEE, WIS.
ST. LOUIS, MO.
LITTLE ROCK, ARK.
SALT LAKE CITY
LOS ANGELES, CAL.
DOLLARS PER NET TON
Average transportation charges.
Average mine price F.O.B. cars.
Average price F.O.B. destination.
Average wholesale price at destination.
Average retail price at destination.
This figure not available for all districts.
JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Chart A113 illustrates the effect of increased mine price, selling margins, and transportation cost upon the retail price of anthracite coal for domestic consumption.

Digitized by Google

LUMBER.

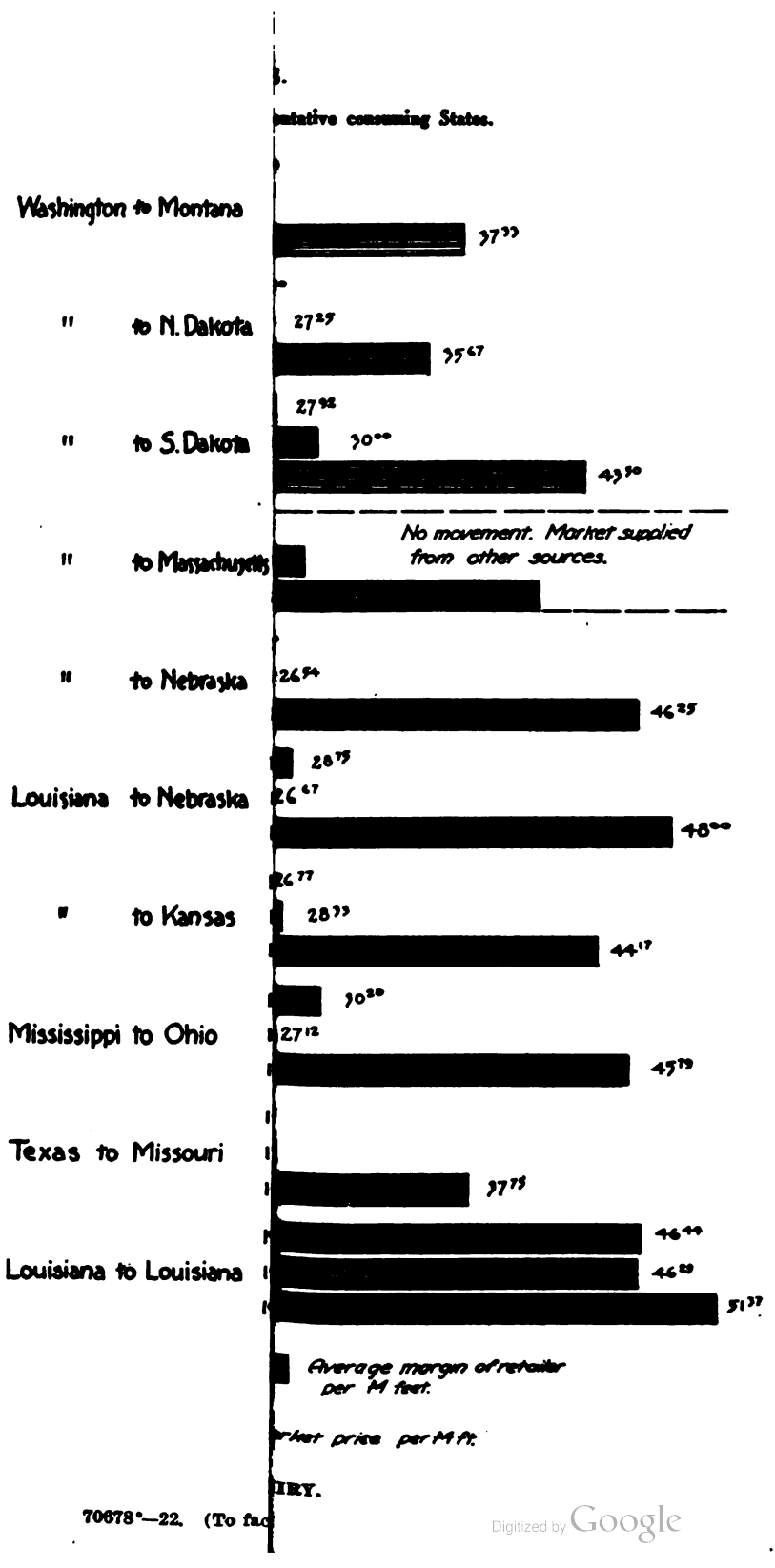
Lumber is one of the country's basic commodities. There are approximately 33,000 sawmills in the United States, employing normally close to 700,000 men in woods and mill operations. The peak lumber production occurred in 1909 at 45,000,000,000 board feet, and since that time, because of the rapid depletion of forests, together with the substitution of other materials for building purposes, such as steel, brick, cement, prepared roofings, etc., and because of the recent general business depression, the production has fallen to a present annual average output of 30,000,000,000 board feet.

Twenty years ago the New England States, other Eastern States, and the so-called Lake States, produced much of the lumber consumed east of the Mississippi and north of the Ohio Rivers. Now the whole production in that territory supplies but 15 per cent of the demand. Less than 5 per cent of the virgin forests of the New England States remain; and New York, once the leading State in lumber production, now manufactures only 50 board feet per capita yearly, although the requirements of its own population are close to 300 board feet per capita. The present cut of lumber in Pennsylvania, as reported by the Chief Forester in reply to Senate resolution 311, is less than the amount consumed in the Pittsburgh district alone. The original pine forests of the Lake States, estimated at 350,000,000,000 feet, have now been reduced to less than 8,000,000,000 feet; and their yearly cut of timber is less than one-eighth of their former production. These four densely populated regions, containing very large areas of forest land, are now largely dependent upon timber grown and manufactured elsewhere, and are becoming increasingly dependent upon timber which must be shipped across the continent.

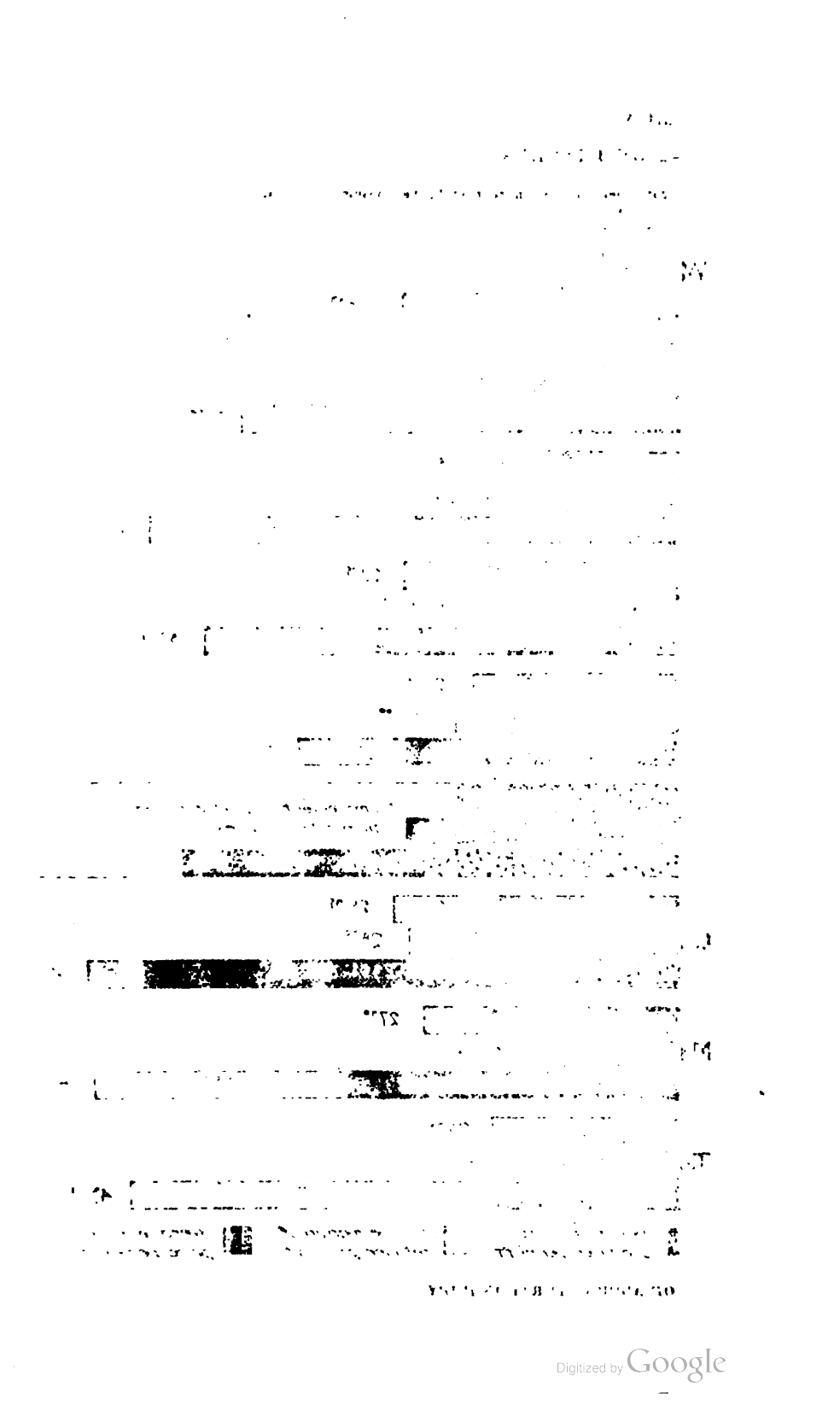
The bulk of the building lumber and structural timbers used in the Eastern and Central States during the last 16 years was grown in the pine forests of the South. The virgin pine forests of the South Atlantic and Gulf States have been reduced from about 650,000,000,000 feet to about 103,000,000,000 feet. The production of yellow pine lumber is now falling off and within 10 years will probably not exceed the requirements of the Southern States. It is estimated by the Forest Service that within 15 years the South Atlantic and Gulf States will become importing regions, obtaining a portion of their requirements on long hauls and higher freight rates from the Pacific coast. All of the foregoing presents an interesting situation from the standpoint of the consumer of lumber, for the reason that there are few basic commodities where freight costs bear such a high relationship to the value of the product as in the case of lumber. The constant depletion of our supply of lumber in the territory east of the Mississippi River necessitates an average haul from the Pacific coast into eastern territory to approximately 2,600 miles over mountains and through hundreds of miles of practically nonproductive areas. The cost of transportation and rates are influenced by these physical conditions. Upon many of the widely used varieties of lumber, the freight cost per thousand feet in the so-called highly competitive territory of the Mississippi River now exceeds the mill price of the lumber at the point of origin.

Digitized by Google

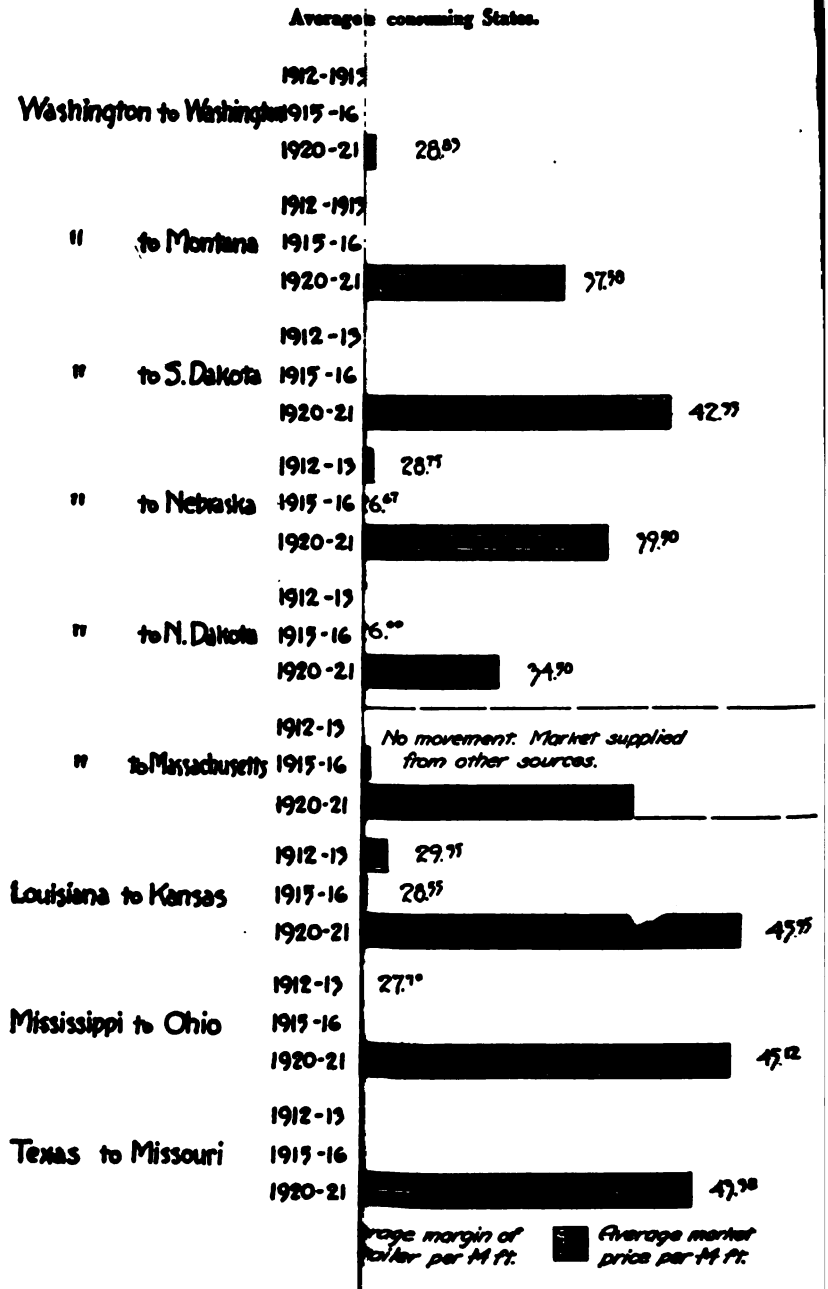
Digitized by Google



Digitized by Google

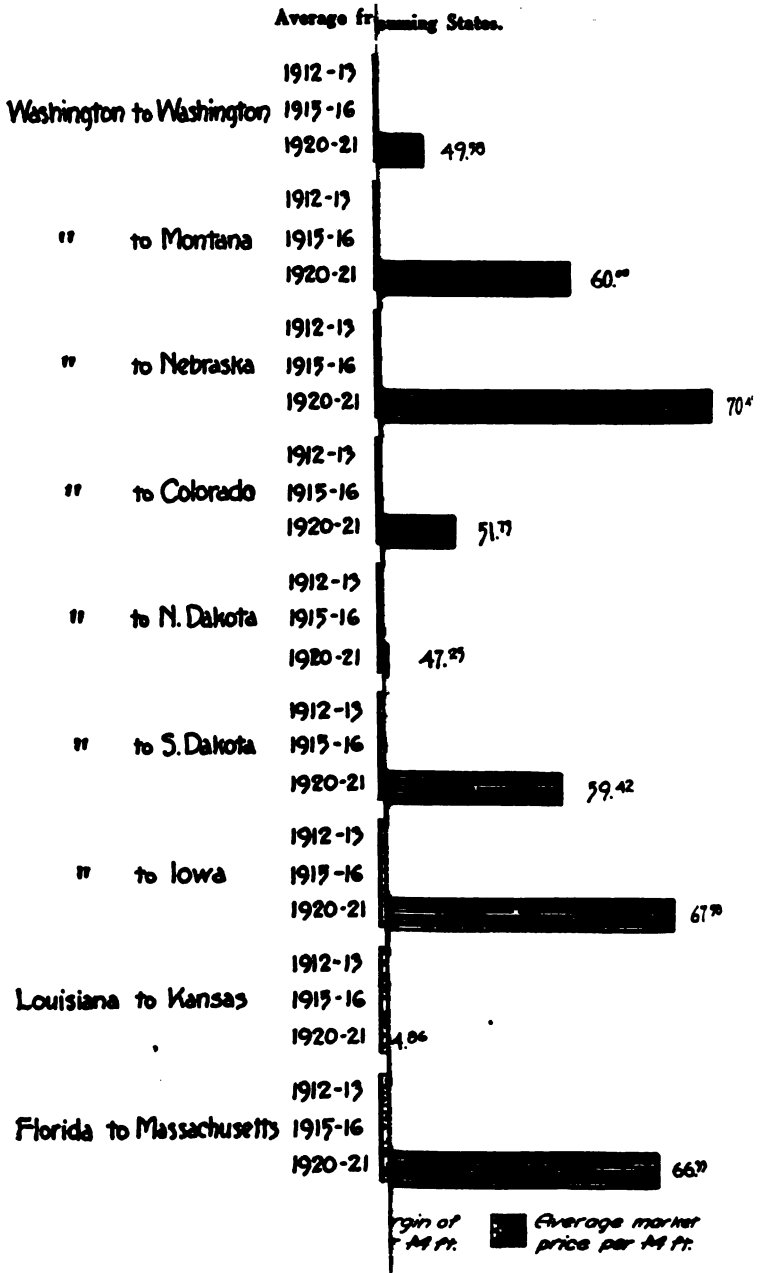


Digitized by Google



Digitized by Google

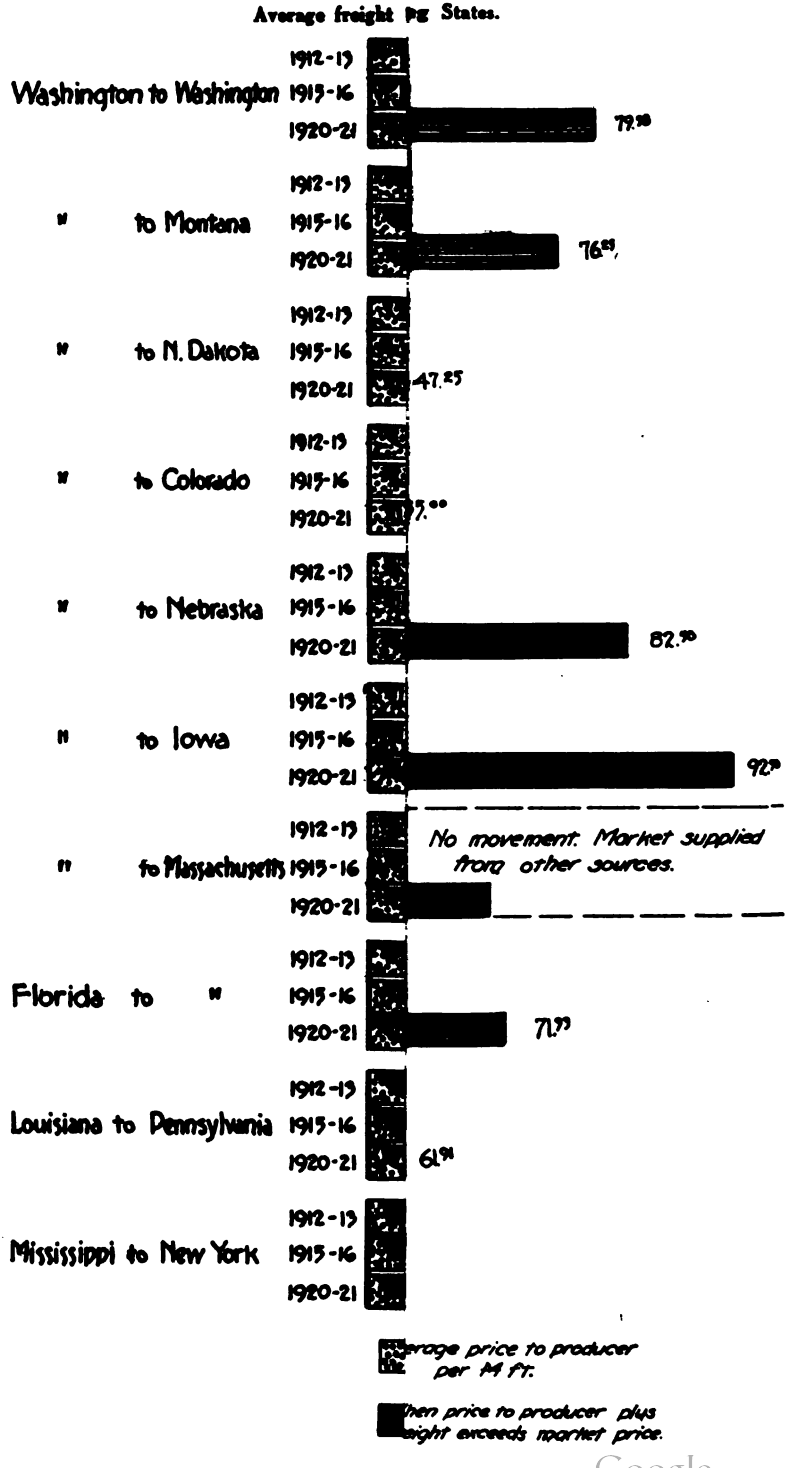
Digitized by Google



70678°—22. (To face p. 189

Digitized by Google

Digitized by Google



70678°—22. (To face p.

Digitized by Google

Forty-six per cent of the lumber produced in this country is consumed directly or indirectly by farmers. A large part of this consumption is in the so-called lower grades. Upon such lower grades of lumber the retailer now realizes on the long hauls more in his margin of sales on the freight cost from the Pacific coast to the point of delivery than upon the mill value of the lumber. For illustration: Common fir boards are now selling for approximately $12 per thousand at mill on the North Pacific coast. Based upon the weight of 2,700 pounds to the thousand feet, the freight rate to any typical Illinois destination exceeds $18 per thousand. The retailer who operates on a 33⅓ to 35 per cent basis fixes a price to the consumer that will approximate $40 per thousand, with a resultant margin of $10 per thousand. Six dollars of his margin is based upon freight cost and $4 upon mill price of lumber. Manifestly, this relationship varies according to the mileage and the freight rate between the point of origin and destination—lumber moving to near-by consuming territory and paying a lesser freight rate shows a smaller ratio of freight costs to mill value.

Table A128 shows the movement of typical items and grades of southern yellow pine and Douglas fir lumber to typical destinations. These tabulations are predicated upon a study involving the use of 6,000 questionnaires. The data obtained from the use of these questionnaires came from representative lumber producers at points of origin and retailers at the destination points. Items representative of the kinds and grades of lumber used by farmers in the vicinity of destination points were taken in this analysis. With the exception of the movement of fir lumber into Massachusetts, these resultant tabulations are predicated upon the movement of actual carloads between the States of origin and destination. The results of this investigation are shown in the tabulations averaged for the months of the year indicated.

Charts A114 to A117 indicate the same relationship between freight rates, producer's price, retailer's cost, and consumer's price, which are given in detail in the tabulations above referred to. In figuring the average weights per thousand feet it was necessary to obtain accurate information from the producers themselves, and the following figures represent the weights determined from the representative mills on the particular items (pounds per 1,000 board feet):

No. 2 yellow pine flooring, from Laurel, Miss	2,700
No. 2 common yellow pine flooring, from Bogalusa, La	2,700
No. 2 fir flooring, from Seattle, Wash	2,000
No. 2 V. G. fir drop siding, from Everett, Wash	2,000
No. 2 yellow pine drop siding, from Bogalusa, La	1,900
Common 8-inch and 10-inch fir boards, from Seattle, Wash	2,500
Common 2-inch and 10-inch southern pine boards, from—	
Bogalusa, La	2,700
Laurel, Miss	2,700
Browndell, Tex	2,700
2 by 4 by 16 feet fir dimension, from Everett, Wash	2,600
2 by 4 by 16 feet southern pine dimension, from—	
Bogalusa, La	2,700
Laurel, Miss	2,700

Where the products of the West and of the South now come into competition east of the Missouri and north of the Ohio Rivers, the freight rate measures appreciably the ability of the various terri-

Digitized by Google

tories to compete successfully for business and also influences the final cost to the consumer. From the standpoint of the railways as a whole they could better afford to obtain the needed revenue from the lumber business by the assessment of relatively higher rates to apply to their short-haul business in order to give needed relief to the long-haul traffic and still maintain a total compensatory revenue. The short-haul business could bear a much greater proportion of the transportation expense than the long hauls, bringing the commodity into the territory of strictest competition. Such a readjustment would make but little difference to the consumer's ability to pay when he is located at the short-haul points, but would appreciably affect a lower price of lumber on the long hauls, where the commodity is now so greatly needed.

Because of the extremely low rates of carriage by water, contrasted with the high rates from coast to coast by rail, an increasing tonnage of lumber is moving from the North Pacific coast and California tidewater points to the Atlantic seaboard through the Panama Canal. Water rates on this product are generally based upon cubic measurement, which allows a much lower rate per thousand feet upon the finished and lighter articles of lumber than upon heavier boards, timbers, and ties.

Rates by water from the North Pacific coast on fir lumber are the same to all Atlantic destinations. The present rate from Everett or Bellingham, Wash., for instance, through the Panama Canal, is approximately $19 per thousand upon ties and timbers and $14 per thousand upon finished lumber. The water movement, if it continues to increase, as it did in 1921, will approximate 500,000,000 feet for 1922.

While the existing level of freight costs, as applied to the movement of lumber, are higher than at any time in the history of the country, and while the manufacturers' price of the product has receded to approximately 25 per cent above prewar level, freight costs alone have not been responsible for the falling off in the building industry or the consumption of the product. Strikes of the building trades in the large centers, the failure of some other building materials to deflate as rapidly as lumber, and many other contributing causes have all influenced the existing depression in the lumber industry, as in other industries, and the consumer's inability or unwillingness to proceed with his building program.

Many dealers and distributors of the product have failed to replenish their stocks to meet a coming expected demand.

The deflation of lumber prices in 1920 was precipitate. The retailer found himself with heavy stocks of high-priced lumber on hand. He could not immediately readjust his prices without facing the possibility of bankruptcy. The deflation of retail prices, therefore, lagged behind the deflation of the producer's price, but marked declines in retail prices were eventually realized.

Table A129 shows the retail prices of lumber at representative points upon specific grades and items of sale, which were determined by thorough investigation of the records of one representative retail dealer at each of the consuming points cited in the tabulation.

The normal annual loading of lumber and forest products throughout the United States approximates 3,000,000 carloads. Lum-

Digitized by Google

ber can be loaded upon practically any class of equipment, and the transportation necessities in this regard are not as exacting as in the case of the majority of our domestic products.

Our conclusions are that there is nothing in the immediate situation by which needed freight rate readjustments can now be measured, but we recommend that the railroads and the public constituted authority make needed readjustments downward in these transportation costs as the economic conditions of the country may warrant.

SHINGLES.

The annual average production of shingles in the United States is between six and seven billion. The greatest proportion of this production is manufactured on the North Pacific coast west of the Cascade Mountains, in Oregon and Washington. The industry represents a scattering of small mills, many of which operate intermittently, due to the fact that they do not control the raw material which they use, but must depend upon the cedar logger not only for the supply but for a reasonable price. The cedar logger on the North Pacific coast is in a position at any time to control the production of the shingle mills through a curtailment in supply or an increase in price.

The market for the cedar shingles produced in the Pacific Northwest is represented by the entire United States, and the extent of their distribution is limited in the main by competition from substitute roofings. In 1908 the production of substitute or patent roofings, such as asbestos shingles, asphalt shingles, etc., was 8,200,000 squares, and in 1919 30,600,000 squares. In 1909 the production of red cedar shingles in the United States was 10,400,000 squares, and in 1919 7,400,000 squares.

As shown by Table A130, prices f. o. b. mills of red cedar shingles during 1920–21 were somewhat higher than 1912–13 average and considerably in excess of the 1915–16 basis. Freight charges per thousand shingles increased during 1920–21 to about 45 per cent over 1912–13 basis. In 1920–21 the clear grade of red cedar shingles marketed from the State of Washington to a typical point in Nebraska represented a mill price of $2.66 per thousand, a freight cost of $2.27 per thousand, a retail price to the consumer of $5.88 per thousand, and the percentage of freight cost to the mill price equaled 85 per cent, to the price paid to the retailer 46 per cent, and to the total cost to the consumer, 39 per cent. The marketing of cypress shingles manufactured in Louisiana to the same typical point in Nebraska shows a much greater freight cost, a higher mill price, and a considerably higher price to the consumer.

It can be definitely stated that on the long hauls the freight cost as applied to the movement of shingles influences considerably both the price received by the producer and the price ultimately paid by the consumer. On the contrary, the marketing of shingles in territory adjacent to the point of production is not appreciably affected by freight rates.

The farming communities are greatly underbuilt. Work on farm buildings and the construction of new facilities has been delayed primarily because the price of construction materials has been beyond the reach of the farmers. So many factors, however, enter into the

Digitized by Google

measure of the final price to the consumer that no one of the distributing elements can be held directly responsible for inflation of consumers' prices.

While this commission finds that freight costs have a very direct bearing upon the price of shingles to the consumer when marketed from the Pacific Northwest territory, since the increases granted by the Interstate Commerce Commission in August, 1920, the so-called long-haul rates on shingles have been reduced approximately 10 per cent, and it is to be expected that the railroads will make such necessary reductions from time to time as will aid in the general readjustment of agriculture and industry. The adjustment of freight rates should be accompanied by reduction in the cost of raw material. During the past year the demand from Japan for cedar logs and cedar bolts has tended to keep the price of this raw material on a relatively high level. Probably no other one factor has restricted the operation of the red cedar mills quite so much as the continued existence of high log prices. If further reductions are made in the transportation costs of shingles, the farmers and other consumers of red cedar shingles have the right to expect that such reductions will not be absorbed by the producers of the raw material. Transportation cost is simply one item of the total cost, and while this fact does not excuse excessive rates, the other factors which make up the total cost to the consumer should do their full share during this deflation process.

PAPER.

The origin of paper making is not definitely known, but is generally credited to the Chinese early in the second century. History first mentions paper making by the Arabs after the occupation of the Chinese Province of Samarkand about the middle of the eighth century, cotton being used. It was introduced into Spain by the Moors in the eleventh century. Manufacture followed in Italy, France, and England, reaching the United States in 1680, where it was first made by hand at Roxborough, Pa. (near Philadelphia), material used being cotton and hemp. The first machine for making paper in continuous sheets was placed in operation in England in 1803.

As far back as 1789 the United States had a tariff on paper, the duty fluctuating from time to time, until in 1913 the Underwood tariff placed newsprint on the free list, where it remains to-day.

During the early part of the nineteenth century straw was used to a considerable extent in the manufacture of newsprint paper, shortly after which the process of making sulphite or chemical wood pulp was invented, and manufacture started in Manayunk, Pa.

Paper production increased from 78,000 tons in 1880 to 1,512,000 tons in 1920. Production of newsprint paper in the United States in 1910 amounted to 1,278,000 tons as against Canadian production of 161,000 tons. The production in the United States for the year 1920 amounted to 1,512,000 tons, an increase of 18 per cent over 1910, whereas Canadian production in 1920 amounted to 883,000 tons, an increase of 448 per cent over 1910. Imports from Canada into the United States in 1910 amounted to 25,000 tons, or 1.9 per cent of the United States consumption, which importation at that time was 11.19 per cent of the Canadian production. In 1920 Canadian exports to the

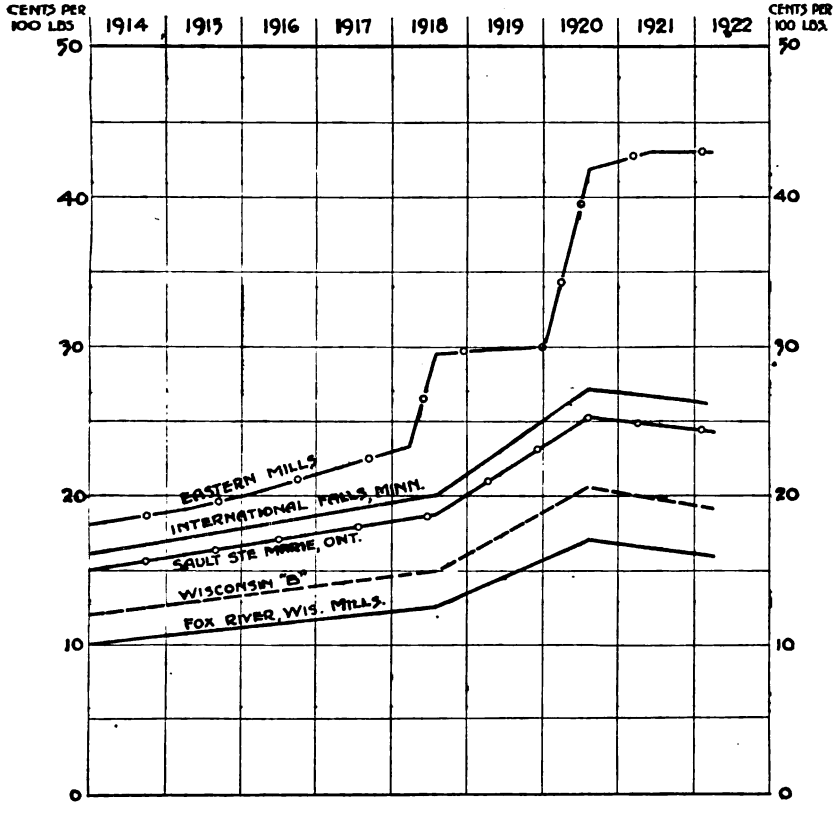
Digitized by Google

United States amounted to 679,910 tons, an increase of 2,720 per cent over 1910, this importation being 77 per cent of the total Canadian production for 1920.

The statement above shows how much faster the production of newsprint paper has expanded in Canada than in the United States. Imports from countries other than Canada in 1910 show 31,661 tons, which was the maximum until 1920, when it reached 50,090 tons.

Chart A 118.

TREND OF CARLOAD RATES ON NEWSPRINT PAPER TO CHICAGO, ILL., FROM VARIOUS PRODUCING TERRITORY.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

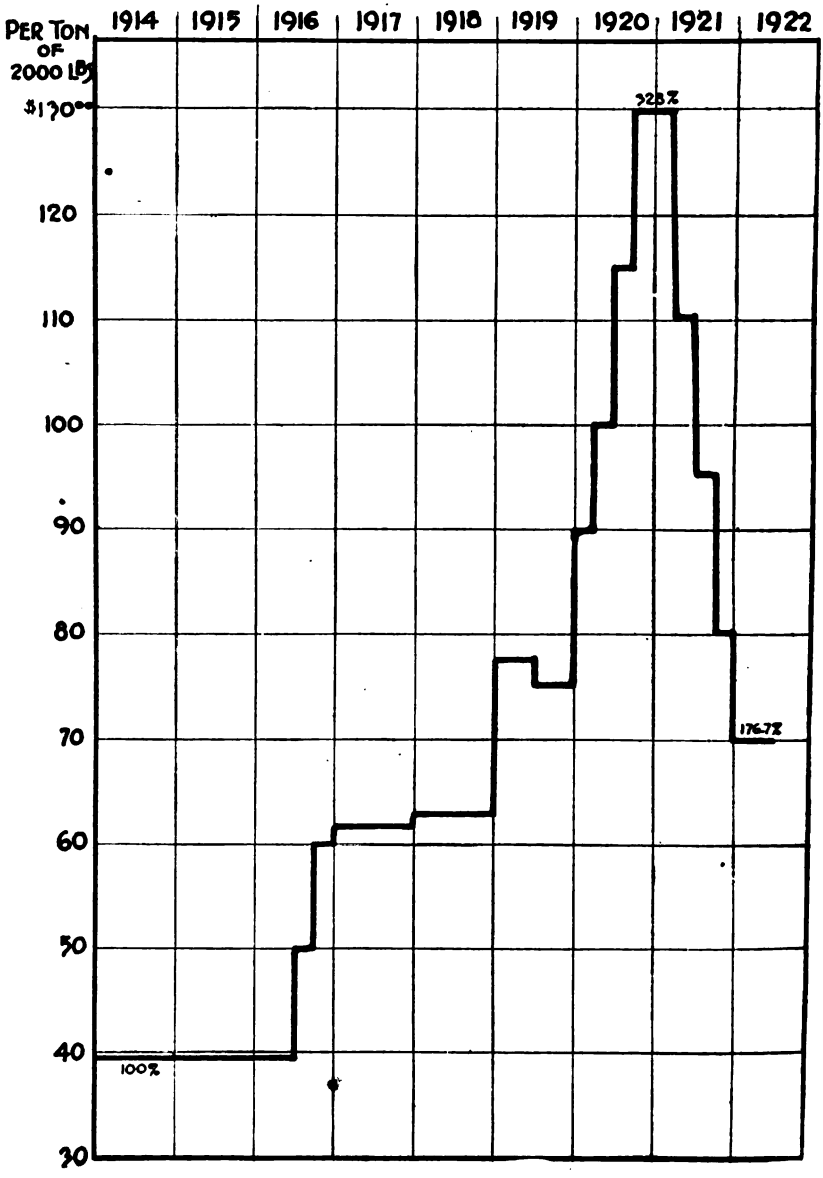
It is asserted that the rapid development of Canadian mills has been due to the location of Canadian mills on streams where their pulp wood could be floated from the forests to the mills, thus saving considerable in freight costs. Mills in the United States, to a very considerable extent, are obliged to ship pulp wood by rail, or to purchase pulp from mills located in the woods, shipping the pulp by rail. In 1909 the Tariff Board reported its findings of a difference of $5.35 per ton in the cost of manufacture of newsprint paper in favor of the Canadian manufacturer.

Digitized by Google

Chart A118 shows the trend of rates on newsprint paper from various producing mills to Chicago, 1914 to 1922, the eastern mills being most seriously affected.

Chart A 119.

NEWSPRINT PRICES IN DOLLARS PER TON, 1914–1922.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

In selling paper in the United States the Canadian manufacturers absorb the freight rates, which they can readily do because manufacture is cheaper in Canada than in the United States.

Competition from Europe during the past 16 months has been quite severe, importations during 1921 from Europe approximating 11,000 tons per month at prices considerably below either United States or Canadian made paper. This has been due to the economic situation in Germany, Sweden, Norway, and Finland, and to the present rate of exchange. It is assumed that as the rate of exchange returns to normal this particular situation will become less burdensome.

Chart A119 shows the fluctuations in price of newsprint paper, 1914 to 1922.

PETROLEUM PRODUCTS.

GASOLINE.

The production and consumption of petroleum products have shown a very great increase in the past two decades. This is especially true of gasoline, the demand for which has grown with the widespread use of the internal combustion engine. The farmers of the United States use a large percentage of the gasoline in the operation of their automobiles, trucks, tractors, and their gas engines, which are in common use on the farms for running electric light plants, fodder shredders, pumps, churns, thrashing machines, and many other kinds of power-driven machinery. Kerosene, fuel oil, and lubricating oils are also used in large quantities.

During the past 10 years there has been an increase of over 1,200 per cent in the number of automobiles in use in the United States. At the present time the registration is about 10,300,000, of which it is estimated that the farmers own and operate about 20 per cent. It has been estimated by Dr. Pogue, a petroleum engineer and economist, in his recent book, Economics of Petroleum, that in 1920 the gasoline produced in the United States was disposed of as follows: Tractors, 10 per cent; trucks, 30 per cent; passenger cars, 40 per cent; exports, 12 per cent; miscellaneous uses, 8 per cent. The production of gasoline in 1914 was 1,460,038,200 gallons; in 1921 it was 5,153,549,318 gallons. In the latter year the domestic consumption of gasoline was 4,516,012,979 gallons, an increase of 259,585,024 gallons over 1920. Exports in 1921 were 524,279,031 gallons, a decrease of 110,968,456 gallons under 1920. Shipments to our insular possessions in 1921 amounted to 27,368,017 gallons, and at the close of the year the stocks at refineries were 586,087,132 gallons, an increase of 123,705,295 gallons over stocks at the close of 1920. The production of gasoline by districts for 1916 and 1921 is shown in Table A131. In some States which have oil inspection departments figures of gasoline inspected are available, and these afford a fairly accurate measure of consumption. For 11 States the consumption in 1920 and 1921 is stated in Table A133. An increase in these States of 8.9 per cent is indicated.

Digitized by Google

TABLE A131.—*Production (output of refineries) of gasoline in the United States.*

[Authorities: Figures for 1914 taken from Bureau of Census report; for other years from Bureau of Mines report.]

District.	1916	1921
	Gallons.	*Gallons.*
East coast [1]	397,265,637	1,020,002,543
Pennsylvania, New York, east Ohio, and West Virginia [2]	152,890,577	263,802,195
West Ohio, Indiana, Illinois, Kentucky, and Tennessee	380,432,482	729,295,594
Oklahoma and Kansas	504,350,665	968,544,973
Texas, Louisiana, and Arkansas	238,344,336	1,298,420,767
Colorado and Wyoming	76,116,480	359,978,226
California	309,480,999	515,236,181
Total, United States	2,058,880,596	5,145,368,717

[1] Locations in east coast district are those towns located on coast only.
[2] Does not include towns located on coast.

Total, United States, 1914, 1,460,038,200 gallons.

TABLE A132.—*Production (output of refineries) of kerosene in the United States.*

[Authorities: Figures for 1914 taken from Bureau of Census report; for other years from Bureau of Mines report.]

District.	1916	1921
	Gallons.	*Gallons.*
East coast	430,375,035	451,191,068
Pennsylvania, New York, east Ohio, and West Virginia	197,540,551	154,457,258
West Ohio, Indiana, Illinois, Kentucky, and Tennessee	163,831,442	168,145,852
Oklahoma and Kansas	301,419,766	303,565,342
Texas, Louisiana, and Arkansas	194,042,779	632,156,106
Colorado and Wyoming	39,099,577	73,626,174
California	129,186,582	161,985,349
Total, United States	1,455,495,732	1,945,126,150

Total, United States. 1914, 1,935,274,800 gallons.

TABLE A133.—*Gasoline consumption.*

State.	1921	1920
	Gallons.	*Gallons.*
Alabama	41,453,020	48,000,000
Arkansas	32,068,457	28,500,537
Colorado	59,987,322	51,338,501
Florida	61,457,348	52,772,082
Georgia	77,698,373	82,221,857
Nebraska	91,973,560	82,361,400
North Dakota	39,290,163	42,178,502
Oklahoma	89,269,620	66,891,167
Oregon [1]	50,957,426	44,975,232
South Carolina	36,735,715	41,458,302
South Dakota [2]	43,638,060	41,000,000
Total	629,489,054	577,983,360
Increase	51,600,694	
Percentage increase	8.9	

[1] Does not include distillate amounting to 2,739,387 gallons in 1920, and 2,455,602 gallons in 1921.
[2] Figures cover fiscal period ended June 30. Figures for other States not available.

Digitized by Google

TABLE A134.—*Kerosene consumption.*

State.	1921	1920
	Gallons.	*Gallons.*
Arkansas	13,065,394	14,668,324
Colorado	8,906,518	8,240,012
Florida	13,858,696	13,425,458
Georgia	21,602,154	26,167,099
Nebraska	27,981,252	27,622,200
North Dakota	15,924,937	18,527,039
South Carolina	18,368,861	20,979,198
Total	119,707,812	129,229,330
Decrease	9,521,518	.....
Percentage decrease	7.4	.....

Figures for other States not available.

KEROSENE.

Kerosene has been long used on the farms as a source of light and heat. It is in growing use as a fuel for tractors. The production of kerosene in 1914 was 1,935,275,000 gallons; in 1921 it was 1,945,126,156 gallons, a much smaller increase than in the case of gasoline. In fact, the production of kerosene in 1921 was 374,969,287 gallons less than in 1920 and 396,506,008 gallons less than in 1919. The domestic consumption of kerosene in 1921 was 1,240,550,811 gallons. The production of kerosene, by districts, for 1916 and 1921 is shown in Table A132, and consumption in 1920 and 1921 for seven States is shown in Table A134, indicating a decrease of 7.4 per cent.

FUEL OIL.

Fuel oil, while consumed in large quantities by manufacturing plants and oil-burning vessels, is also widely used in all parts of the United States. It competes with coal as a source of both commercial and domestic heat and power. In the Pacific coast territory the use of fuel oil for these purposes predominates. In California the use of petroleum is practically exclusive of other fuels. The production of fuel oil in 1921 was 9,663,816,135 gallons. Domestic consumption amounted to 7,080,351,916 gallons.

LUBRICATING OILS.

The steadily growing use of automobiles and power-driven machinery by farmers has, of course, involved a proportionately increased consumption of lubricating oils.

STOCKS OF PETROLEUM PRODUCTS.

At the close of the year 1921 the stocks on hand at refineries, stated in gallons, were as follows: Gasoline, 586,087,132; kerosene, 341,008,555; fuel and gas oil, 1,331,265,439; lubricating oils, 216,765,516.

TANK CARS.

Shippers of petroleum and its products furnish their own tank cars. The number of privately owned tank cars in petroleum service January 1, 1912, was 21,557; on January 1, 1921, 114,829. In addi-

Digitized by Google

tion, the railroads owned 9,057 tank cars January 1, 1912, and 14,136 January 1, 1922.

CRUDE OIL.

The world's production of crude oil in 1920 is estimated at 694,854,000 barrels, of which about 87 per cent was produced in the United States and Mexico. Domestic production in 1911 was 220,449,391 barrels; in 1921 it had increased to 469,639,000 barrels. The increase in Mexican production during that period was proportionately much greater; in 1911—12,552,798 barrels; in 1921—approximately 195,000,000 barrels. In the latter year the United States imported 125,307,000 barrels. During the 10-year period in which automobiles have increased 1,200 per cent in number, there has been an increase of only somewhat more than 100 per cent in domestic crude-oil production. Furthermore, the domestic production of crude oil has moved away from territories of largest consumption of petroleum products. In 1900 of the crude oil produced in the United States east of the Rocky Mountains, 97.8 per cent was produced in the territory east of the Mississippi River and north of the Ohio and Potomac Rivers; in 1920 only 10.6 per cent. The same territory, however, together with the States of Iowa, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin, which produce practically no crude oil, consumed, in 1920, about 68 per cent of the gasoline which was used east of the Rocky Mountains. The development of crude oil production in areas outside of the largest consuming territories has resulted in the location of refineries at considerable distances from their principal markets and has had an important part in making the factor of transportation a primary consideration to the industry and the public.

THE RELATIVE YIELDS OF PETROLEUM PRODUCTS FROM A BARREL OF CRUDE OIL.

The yields of petroleum products from a barrel of crude oil vary greatly with the quality of the crude and the refining processes to which it is subjected. Before the development of the internal-combustion engine kerosene and not gasoline was the product in greatest demand. In that period the average commercial yield of gasoline was about 11 per cent. It is now somewhat more than 25 per cent. Taking the yields in 1921 for the country as a whole the relation of output of the various petroleum products is as follows: Fuel and gas oil, 48 per cent; gasoline, 26 per cent; kerosene, 9 per cent; lubricating oils, 4 per cent; miscellaneous oil, 6 per cent; wax, coke, and asphalt, 3 per cent; losses, 4 per cent.

LOCATION OF REFINERIES.

The petroleum refineries are located at various places in the United States. The plants of the larger companies are chiefly located near the important consuming markets and frequently on navigable water. Their crude oil is received by pipe line or tank steamer. The companies most dependent upon the railroads for transportation are those located nearer the centers of crude-oil production, such, for example, as the refineries in the Appalachian and mid-continent fields. These refineries in many cases receive their crude oil by tank

Digitized by Google

car and are rarely in position to ship their refined products by steamer or barge. Their ability to reach the important consuming markets, and by their competition to affect prices, depends in very large measure upon freight rates.

INCREASES IN RAILROAD RATES.

Petroleum and its products have been subjected to very great increases in freight rates since 1914, as have other commodities. A comparison of the rates applicable to crude oil and its products from Oil City, Pa., to various destinations as of June 1, 1914, and February 1, 1921, together with the percentages of increase, is shown in Table A135. It will be noted that the increases range from 82 per cent to 129 per cent. There has been no deflation in rail rates on petroleum which can be compared with that which has taken place in petroleum values.

TABLE A135.—*Freight rates on gasoline and kerosene.*

[In cents per 100 pounds.]

From Oil City, Pa., to—	June 1, 1914.	Feb. 1, 1921.	Percentage of increase.
	Cents.	*Cents.*	
Philadelphia, Pa.	14.5	28.0	92
Pittsburgh, Pa.	8.5	19.0	124
Buffalo, N. Y.	8.5	19.5	129
Boston, Mass.	19.0	34.5	82
Cleveland, Ohio	9.0	19.5	117
Detroit, Mich.	11.5	24.5	113
Indianapolis, Ind.	15.5	28.5	84
Milwaukee, Wis.	16.0	32.0	100
Chicago, Ill.	16.0	30.0	88

DEFLATION IN VALUES OF PETROLEUM AND ITS PRODUCTS.

The deflation which has taken place in petroleum values, comparing the high prices of 1920 with the prices prevailing in January, 1922, is approximately as follows:

	Per cent.
Crude oil has declined in value	40
Fuel oil has declined in value	66
Gasoline has declined in value	29
Kerosene has declined in value	35
Lubricating oils have declined in value	47

While the decline in petroleum values has been heavy, the prices of gasoline and kerosene paid by the consumer are still above the prewar levels.

RAILROAD RATES IN RELATION TO PRICES OF PETROLEUM PRODUCTS.

The important relation of freight rates to prices of petroleum products is clearly shown by comparing refinery prices f. o. b. Tulsa, Okla., prevailing in February, 1922, with the current freight charges from Tulsa to Kansas City, Mo., Chicago, Ill., Bismarck, N. Dak., and Pittsburgh, Pa. Of the aggregate cost—refinery price plus freight charges—the distribution is as follows:

Digitized by Google

Fuel oil.—To Kansas City, 56.3 per cent goes to the refiner, 43.7 per cent to the railroad; to Chicago, 46.7 per cent to the refiner, 53.3 per cent to the railroad; to Bismarck, 23.1 per cent to the refiner, 76.9 per cent to the railroad; to Pittsburgh, 34.1 per cent to the refiner, 65.9 per cent to the railroad.

Gasoline.—To Kansas City, 88.1 per cent goes to the refiner, 11.9 per cent to the railroad; to Chicago, 83.1 per cent to the refiner, 16.9 per cent to the railroad; to Bismarck, 65.6 per cent to the refiner, 34.4 per cent to the railroad; to Pittsburgh, 74.6 per cent to the refiner, 25.4 per cent to the railroad.

Kerosene.—To Kansas City, 66.7 per cent goes to the refiner, 33.3 per cent to the railroad; to Chicago, 57 per cent to the refiner, 43 per cent to the railroad; to Bismarck, 33.9 per cent to the refiner, 66.1 per cent to the railroad; to Pittsburgh, 44.2 per cent to the refiner, 55.8 per cent to the railroad.

EFFECT OF INCREASES IN RAIL RATES ON TONNAGE OF PETROLEUM HANDLED BY THE RAILROADS.

The effect of the large increases in freight rates upon the tonnage of petroleum and its products handled by the railroads has been very marked. During the first nine months of 1921 the railroads handled 26.2 per cent less crude oil than in the corresponding period of 1920, although the crude oil run by refineries increased 5 per cent in the same period of 1921 over 1920. The loss of tonnage of refined products was 8.5 per cent, although the output of the refineries was relatively the same. In the aggregate, taking crude oil and refined products together, the loss of tonnage to the railroads amounted to 104,109 carloads in the first nine months of 1921, as compared with the same period of 1920. The fact that there was no corresponding decrease in consumption indicates that the increased transportation costs forced petroleum into other channels of transportation and placed a serious competitive handicap upon those refineries which are dependent upon the railroads for an outlet to the large consuming markets.

In this connection it is significant to note that the movement by railroads of refined petroleum products during the first nine months of 1921 was but 40.6 per cent of the output of refineries in that period.

IMPORTANCE OF RAIL RATE REDUCTION.

The present high level of freight rates on petroleum and its products restricts the distribution of the product of refineries wholly dependent upon rail transportation and limits their ability to compete in the large consuming centers with the products of refineries having the advantage of pipe-line and water transportation. A reduction in freight rates on petroleum and its products would restore the equilibrium between producing districts and result in reduced prices to the consumer.

CEMENT.

There are 104 large cement plants in the United States and they produced in the calendar year 1921, 98,263,000 barrels of Portland cement. Probably no other one building material industry shows

Digitized by Google

such tremendous growth as is here represented. Plants are usually located near the source of the raw material, and the production is so distributed that each section of the country is furnished with the product from large plants located near or adjacent to the demand. Cement producers are enabled to secure their raw material in nearly every State of the Union, and the distribution by rail and truck is constantly growing more localized, owing to the increase in building throughout every community and the continued substitution of cement for other building materials. There is probably no farm dwelling in this country constructed now which does not depend upon the use of cement to a greater or less degree. It can be justly called one of the country's "basic" commodities.

Although the greatest tonnage is produced in the area of greatest population directly east of the Mississippi and north of the Ohio Rivers, every section of the country has plants usually capable of supplying the local demand.

In 1900 the production of Portland cement amounted to 8,482,020 barrels and had increased to 98,263,000 barrels in 1921, or over 1100 per cent. The production in 1921 exceeded that of any other year in the industry with the exception of 1920 and fell only slightly short of the 1920 production, which amounted to 100,302,000 barrels. At present, as indicated by Table A136, the price of Portland cement per barrel is approximately 50 per cent over the 1913 average, while the total mill receipts for the product were less than those of 1917, 1919, and 1920. The consumption of Portland cement has constantly maintained a healthy level, and the present condition of the industry is prosperous in comparison with other industries and agriculture. This condition is primarily due to the exceptional increase in demand during 1921 for the building of surfaced roads, approximately 2000 per cent more Portland cement finding its market for road construction in 1921 than during 1913. This fact is also indicated in detail by Table A136.

TABLE A136.—*Statement of total shipments of cement in the United States for the years 1911–1921, showing a separation of the amount of cement used for concrete highways and for other purposes.*

Year.	Total barrels of cement shipped in United States.	Average price f.o.b. mill per barrel.	Total mill receipts.	Total barrels of cement shipped for construction of concrete highways.	Total barrels of cement shipped for other than concrete highways.
1913	88,689,377	$1.01	$89,576,270.77	[1] 1,113,100	87,576,277
1914	86,437,956	.92	79,522,919.52	[1] 3,536,100	82,901,856
1915	86,891,681	.97	84,284,930.57	6,199,000	80,692,681
1916	94,552,296	1.17	110,626,186.32	8,061,000	86,491,296
1917	90,703,474	1.66	150,567,766.84	7,291,000	83,412,474
1918	70,915,508	1.67	118,428,898.36	5,624,000	65,291,508
1919	85,612,899	1.79	153,207,089.21	7,883,000	77,729,899
1920	96,329,000	1.66	159,906,140.00	11,939,000	84,390,000
1921	94,672,000	1.50	142,008,000.00	20,667,000	74,005,000

[1] Indicates barrels of cement required for construction of concrete roads placed under contract during the years 1910–1914. The figures for later years show barrels of cement used in highway construction during 1915–1921.

Digitized by Google

TABLE A137.—*Statement showing the freight rate on representative raw materials entering into the manufacture of cement to representative plants in 1913 and 1921, actual and relative.*

Commodity.	Average freight rate per ton.		Relative average freight rate per ton.	
	1913	1921	1913	1921
Coal	$1.36	$2.49	100	183
Limestone	.419	.919	100	219
Shale	.228	.567	100	248
Gypsum	1.49	2.75	100	185
Clay	.292	.58	100	199
Fuel oil	1.71	3.41	100	199

NOTE.—Two hundred pounds of coal required to produce one barrel of cement. Freight on 200 pounds of coal 1913, $0.136; 1921, $0.249; increase, $0.113.

The average rail haul on cement in the territory of Chicago, Ill., and east is approximately 150 miles; in the territory west of Chicago, 260 miles. A study analyzing the freight costs from 13 representative producing points to 316 consuming points shows in Table A137 average freight cost over steam lines in 1915 have been $0.4504 per barrel; in 1921, $0.720 per barrel. The mill price in 1915 was $0.97 per barrel; in 1921, $1.50 per barrel.

The fact that shipments have held reasonably steady at good prices during 1921, due to the activity in road building, has served to stabilize conditions in the industry, but this view does not afford a true picture of the effect of high prices and high transportation costs upon the home builder and farmer. Both freight rates and prices of this commodity should follow the trend of price levels of other basic commodities, and when the freight rates are reduced such decrease should be reflected in the price to the consumer and not absorbed as profit by the various other factors in the distribution system. The public constituted authorities might properly analyze retail price trends of this commodity in relationship to the level of rates established.

HOLLOW TILE.

This commodity is one comparatively new in the field of building materials. It is generally used in the construction of large structures in urban centers and is fast finding its way to the farms of the country for general building and drainage purposes.

In analyzing the production in the following table it was found that the greatest production of hollow tile existed in the following States:

	Tons.
Ohio	596,718
Iowa	238,789
New Jersey	180,127
Illinois	172,470
Pennsylvania	151,551
Indiana	145,255

These six States produced 76 per cent of the total volume and 75 per cent of the value for 1918. The responsibility in the main for this condition is that these States have large deposits of fire clay and shale suitable for the manufacture of the proper quality of the

Digitized by Google

ware. Also in four of the States coal is found and mined with the clay, affording relatively cheap fuel.

It is conservatively estimated that 1 ton of fuel is required to each 3 tons of the ware produced. Thus the cost of production in Iowa, New Jersey, and other States where clay deposits are found is somewhat higher because of the distance from the great production of coal. This is generally reflected in the higher prices prevailing in those territories, especially where coal must undergo transportation.

As bearing upon the present condition of the industry and its relationship to the consumers of their products and to transportation, the records of the hollow-tile association show that the total shipments by rail in 1920 were 945,000 tons, with a production of 1,162,000 tons; in 1921, shipments of 646,000 tons, a reduction of 32 per cent in shipments and 46 per cent in production. Further records of the National Fire Proofing Co. show that for the year 1920 they forwarded by rail 11,080 cars at an average of 30 tons per car, or the equivalent of 332,400 tons. From the same plants in 1921 there were shipped 8,019 cars at 30 tons per car, or the equivalent of 240,570 tons, a decline of 28 per cent in shipments. These same 20 plants in 1916 shipped 21,509 cars, or 645,270 tons, so that the shipment of 1921 as adjusted was only 37 per cent of the 1916 business.

As reflecting the falling off in the agricultural business of this company, their reports show that for the silo season ending October 1, 1921, 308 silos were shipped, as compared with 1,304 during 1920 season, a decrease of 996 silos, or approximately 76 per cent. The foregoing is a necessary prerequisite to a brief discussion of the relationship of transportation rates to the manufacture and movement of this commodity.

During 1919, 73 per cent of the brick and tile traffic moved under rates less than $2.04 per ton. An analysis made by the National Fire Proofing Co. of 464 orders shipped from various producing plants in Ohio between September 1, 1920, and May 1, 1921, showed an average freight rate paid of $3.58 a ton, as against an average in 1918 of $1.90 a ton, and approximately $2.60 in 1919. For every 20 cents a ton increase in freight rates the result is to increase the price per thousand tiles to the consumer in the amount shown in the last column of Table A138.

TABLE A138.—*Increase in the price per thousand of hollow tile to the consumer caused by increase of 20 cents a ton in freight rate.*

Size.	Weight.	Amount of increase per M.	Size.	Weight.	Amount of increase per M.
4-inch partition	16	$1.70	8-inch wall tile	34	$3.60
6-inch partition	22	2.30	10-inch wall tile	40	4.20
8-inch partition	30	3.10	12-inch wall tile	52	5.10
10-inch partition	35	3.70	4 by 5 by 12 inch bakups	9	.95
12-inch partition	40	4.20	8 by 5 by 12 inch bakups	15	1.82

While building tile as such is not a predominant factor in the products used by the farmer or by the average consumer in the smaller centers, it does represent a considerable factor in the build-

Digitized by Google

ing industries of the urban centers. It is, of course, used to a large extent for silo construction on the farms, and as such represents one of the important commodities used in farm building.

To illustrate the effect of freight costs upon the price of materials necessary to produce the tile a study was made of the items of production costs at Philadelphia, Pa., the most important of which in their relationship to freight costs is portrayed in the paragraphs A, B, C, and D below:

A. The cost of moving a car of steel of 30 tons at $7 per ton from Pittsburgh to Philadelphia is $210. At $45 per ton the value of the steel transported is $1,350. The transportation charges are 15½ per cent of the delivered price.

B. The cost of transporting a car of clay building tile of 30 tons, at $5.20 a ton, from Canton, Ohio, to Philadelphia, Pa., an even 100 miles greater distance, is $156. The value of the commodity transported at the average price prevailing to-day of $5.40 per ton is $162, the freight charges representing 49 per cent of the delivered price.

C. The cost of moving a car of face brick of 33 tons (11,000 brick) at a freight rate of $4.30 from Kittanning, Pa., to Philadelphia, mileage practically the same as from Pittsburgh, is $141.90. The value of the commodity transported at the prevailing average price of $35 per thousand is $385, and the transportation charges are, therefore, 32 per cent of the delivered price, equivalent to $12.90 a thousand brick.

D. The cost of moving a car of yellow-pine lumber of 20,000 feet, approximately 25 tons, from the Mississippi yellow-pine center to Pittsburgh at 52½ cents per hundredweight, or $10.50 a ton, is $262.50. The value of the lumber at an average price of $45 per thousand is $900, so that the transportation cost represents 22½ per cent of the delivered price of the lumber.

It is obvious that freight costs distributed over the unit of sale will always be greater upon the bulky, heavy-loading commodities, whose original value is comparatively low, than on the higher class of articles, such as finished food products, clothing, high-grade furniture, etc. It must be expected that the percentage of freight costs to the prices of these low-grade commodities can not be as low as those for the higher-valued articles, as these commodities, with other so-called low-grade commodities of heavy tonnage, represent the great factors in the earning capacity of our railroads. To reduce rates on this commodity, for instance, to a basis of fixed relationship with higher-classed articles between value and freight costs would disregard entirely the element of the cost of transportation service. It must be said, however, that tile is a basic commodity and that a reduction in the freight costs should be undertaken when the carriers are in a financial position to make further reductions in their rates.

BOOTS, SHOES, DRY GOODS, COTTON PIECE GOODS.

Higher freight rates are not infrequently urged as an excuse for increases in prices without justification. While freight rates are often a considerable factor in the cost of distribution of low priced, heavy-tonnage commodities, and may restrict the radius of distribution thereof and sometimes even prevent shipment altogether, as a rule freight rates have not kept pace with increases in prices of such articles as dry goods, boots, shoes, and other highly fabricated articles usually purchased in less than carload quantities and do not restrict or diminish the movement of such commodities. The influence of freight rates upon basic commodities is increased by the

Digitized by Google

fact that such increases usually become a part of the dealer's cost and the basis of profit additions, and are thus multiplied in the final price paid by the consumer. Upon the higher cost and more highly fabricated articles the freight charges are sometimes absorbed by dealers, and even where they are a part of the basis cost upon which profits are figured, are not multiplied to the same extent as freight rates upon high tonnage, lower-priced commodities.

Men's shoes, packed 24 pair in a case, have a shipping weight of 79 pounds to the case. They are now transported from Lynn, Mass., to Chicago at a rate of $1.57½ per hundred, which amounts to $1.24 per case, or 5½ cents per pair. Children's shoes, packed 72 pairs to a case, weighing 107 pounds, are transported to-day from Lynn, Mass., to Lincoln, Nebr., at a rate of $2.85½ per hundred, or $3.05 per case, which is 4⅓ cents per pair. A similar shipment from St. Louis, Mo., to Lincoln, carries a charge of 3⅜ cents per pair. Table A 139 shows the number of pair packed in a case and the shipping weight per case. Tables A140 and A141 show the freight rates from various shoe-producing points to miscellaneous destinations throughout the United States. The transportation costs on the various kinds of shoes can be readily calculated from these tables for the years 1913, 1918, and 1921, the rates being shown as of September 1 of each year.

TABLE A139.—*Number of shoes and shipping weight per case.*

	Pairs.	Pounds.		Pairs.	Pounds.
Infants'	72	75	Boys'	24	58
Children's	72	107	Women's	36	69
Misses'	72	130	Men's	24	79

TABLE A140.—*Freight rates on shoes.*

[Any quantity per 100 pounds.]

From—	To—	Sept. 1, 1913.	Sept. 1, 1918.	Sept. 1, 1921.
Philadelphia, Pa.	Pittsburgh, Pa.	$0.39	$0.60	$0.86
	York, Pa.	.27	.40½	.56½
Rochester, N. Y.	St. Paul, Minn.	.95	1.40	1.86½
	Grand Rapids, Mich.	.50	.76½	1.07
Binghamton, N. Y.	St. Paul, Minn.	.95	1.40	1.86½
	Pontiac, Mich.	.44	.70½	.98½
Boston, Mass.	Keene, N. H.	.27	.40	.63
	Augusta, Me.	.35	.56½	.88½
St. Louis, Mo.	Superior, Nebr.	1.11	1.31½	1.77½
	Lincoln, Nebr.	.65	.81½	1.10
	Huron, S. Dak.	1.24	1.55	2.09½
	Sedalia, Mo.	.53	.66½	.90
	Dallas, Tex.	1.47	1.84	2.48½
	Austin, Tex.	1.47	1.84	2.48½
	Burlington, Iowa.	.396	.52	.81
	Hannibal, Mo.	.33	.43½	.58½
	St. Paul, Minn.	.63	.79	1.06½
	Columbus, Ohio.	.46	.75	1.05
	Indianapolis, Ind.	.46	.75	1.05
	Laurel, Miss.	1.18	1.47½	1.96½
	Asheville, N. C.	1.32	1.59	2.12
	Springfield, Ill.	.316	.415	.625
Indianapolis, Ind.	Terre Haute, Ind.	.25	.31½	.55½
	Evansville, Ind.	.31½	.53	.74
Savannah, Ga.	Macon, Ga.	.63	.79	.99
Birmingham, Ala.	Gadsden, Ala.	.41	.51½	.64½
	Anniston, Ala.	.46	.57½	.72½

Digitized by Google

TABLE A140.—*Freight rates on shoes*—Continued.

From—	To—	Sept. 1, 1913.	Sept. 1, 1918.	Sept. 1, 1921.
Chicago, Ill.	Grand Rapids, Mich.	$0.33	$0.59	$0.82½
	Aberdeen, S. Dak.	1.14	1.42½	1.92½
	Watertown, Wis.	.25	.31½	.42½
	Indianapolis, Ind.	.31½	.56½	.79
	Marshalltown, Iowa.	.40	.44	.58½
	Greeley, Colo.	1.80	2.25	3.04
	Sioux City, Iowa.	.80	1.00	1.35
	Oshkosh, Wis.	.43	.54	.73
	Wausau, Wis.	.50	.62½	.84½
	South Bend, Ind.	.22	.42	.59
	Coldwater, Mich.	.30	.52	.73
	Kankakee, Ill.	.241	.30	.53½
	Burlington, Iowa.	.396	.52	.81
	Hannibal, Mo.	.42	.55	.88½
	St. Paul, Minn.	.60	.75	1.01½

TABLE A141.—*Freight rates on shoes.*

[Any quantity per 100 pounds.]

From Lynn, Mass., to—	Sept. 1, 1913.	Sept. 1, 1918.	Sept. 1, 1921.	From Lynn, Mass., to—	Sept. 1, 1913.	Sept. 1, 1918.	Sept. 1, 1921.
Pittsburgh, Pa.	$0.50	$0.74	$0.99½	Superior, Nebr.	$1.94	$1.30½	$4.12½
Rochester, N. Y.	.40	.62	.87	Huron, S. Dak.	1.89	2.32½	3.80
Grand Rapids, Mich.	.69	.83	1.45	Aberdeen, S. Dak.	1.80	2.32½	3.80
Pontiac, Mich.	.62	.74	1.29	St. Paul, Minn.	1.15	1.62½	2.16½
Coldwater, Mich.	.69	.83	1.45	Columbus, Ohio.	.59	.70	1.23
Indianapolis, Ind.	.70	.83½	1.46½	Laurel, Miss.	1.34	1.67½	2.33
Evansville, Ind.	.83	.99	1.73½	Dallas, Tex.	2.35	3.16	4.33½
South Bend, Ind.	.72	.86½	1.51	Ashville, N. C.	1.24	1.55	2.05
Springfield, Ill.	.85	1.01½	1.78	Macon, Ga.	1.14	1.42½	2.10
Chicago, Ill.	.75	.90	1.57½	Anniston, Ala.	1.26	1.57½	2.26½
Burlington, Iowa.	.97	1.05½	1.84½	Watertown, Wis.	1.1166	1.32½	1.86
Marshalltown, Iowa.	1.27½	1.45½	2.38½	Greeley, Colo.	2.50	3.08	4.58
Sioux City, Iowa.	1.43	2.05½	3.19½	Oshkosh, Wis.	1.06	1.64	2.10
Lincoln, Nebr.	1.48	1.80½	2.85½	Hannibal, Mo.	.88	1.05½	1.84½

The amount of freight in the average purchase of dry goods is so small that it is difficult to show it. The purchase of dry goods or cotton piece goods by the average housewife is in a quantity weighing but a few pounds, and with freight rates running in many cases less than $1 per hundred on these commodities, it will be readily seen that the freight ingredient is a negligible quantity. The freight per yard or per bolt between various shipping points shown in tables A142 and A143 to the various destinations indicated can be approximately determined on the basis of rates shown as in effect July 1, 1913, July 1, 1918, and November 1, 1921.

TABLE A142.—*Freight rates on dry goods.*

[Any quantity per 100 pounds.]

From—	To—	July, 1913.	July 25, 1918.	Nov. 1, 1921.
Minneapolis, Minn.	Devils Lake, N. Dak.	$0.96	$1.20	$1.62
Memphis, Tenn.	Indianola, Miss.	.84	1.05	1.31½
Buffalo, N. Y.	Elmira, N. Y.	.29	.44	.61½
Pittsburgh, Pa.	Salem, Ohio.	.15½	.39	.54
	Bucyrus, Ohio.	.33	.58	.81
Chicago, Ill.	Greeley, Colo.	1.80	2.25	3.04
	Marshalltown, Iowa.	.60	.74	1.00
	Indianapolis, Ind.	.31½	.56½	.79
	Aberdeen, S. Dak.	1.14	1.42½	1.92½
	Grand Rapids, Mich.	.33	.59	.82½
Kansas City, Mo.	Tucson, Ariz.	2.50	3.12½	4.15½
	Albuquerque, N. Mex.	1.70	2.12½	2.87
Boston, Mass.	Keene, N. H.	.24	.34½	.53½
Buffalo, N. Y.	Le Roy, N. Y.	.17	.25½	.35½
New York, N. Y.	New Britain, Conn.	.23	.47½	.63

Digitized by Google

TABLE A143.—*Freight rates on cotton piece goods.*

[Any quantity per 100 pounds.]

From—	To—	July, 1913.	July 25, 1918.	Nov. 1, 1921.
Minneapolis, Minn.	Devils Lake, N. Dak.	$0.63	$0.79	$1.06½
Memphis, Tenn.	Indianola, Miss.	.49	.61½	.79
Buffalo, N. Y.	Elmira, N. Y.	.21	.32	.45
Pittsburgh, Pa.	Salem, Ohio	.13	.28	.39½
	Bucyrus, Ohio	.24½	.42	.58½
Chicago	Greeley, Colo.	1.30	1.45	1.96
	Marshalltown, Iowa	.40	.44	.59½
	Indianapolis, Ind.	.23	.41½	.57½
	Aberdeen, S. Dak.	.67	.84	1.13½
	Grand Rapids, Mich.	.24½	.42½	.59½
Kansas City, Mo.	Tucson, Ariz.	2.50	3.12½	4.16½
	Albuquerque, N. Mex.	1.25	1.87½	2.53
Boston, Mass.	Keene, N. H.	.19½	.29	.42
Buffalo, N. Y.	Le Roy, N. Y.	.12	.18½	.25½
New York, N. Y.	New Britain, Conn.	.16	.23½	.44½

LOSS AND DAMAGE TO GOODS IN TRANSIT.

Claims paid by railroads to shippers for the loss and damage of goods in transit involves a very considerable expense to the carriers and should be considered in connection with expense of operation. Loss of goods in transit is caused by theft, improper marking, errors in waybilling, neglect by railway employees at transfer points, and in making delivery from local cars. Damage results from defective equipment, rough handling by train and switch crews, or in freight house, inadequate protection from heat or cold, improper packing, and improper stowing and bracing. The carrier is wholly responsible in some cases, the shipper in others, and both carrier and shipper in others. The measure of the value of goods lost or damaged in transit may be found in the freight claim accounts of the railroads, and this discussion will be made from that basis.

It was fully expected that due to the abnormal increase in the level of prices of commodities during the war, and following that period to the middle of the year 1920, the total loss and damage claim account of the carriers in amount of money, even under the strictest supervision, would greatly increase. In September, 1920, carriers set up rather elaborate machinery for combating the causes for loss and damage of freight. Deflation in prices began in the middle of 1920, and it was confidently expected that this fact, with the efforts put forth by the carriers, would show an appreciable decrease in the loss and damage account by the middle of the year 1921. This expectation was in part fulfilled, although more than 50 per cent of claim payments on business moved in the year 1920, were made subsequent to January 1, 1921, and are included in the payments shown in Table A144. Under the bill of lading conditions the shipper may file a claim for loss or damage in practically all cases within two years and one day from the date of shipment. Most of the year 1920 involved maximum industrial conditions. The common experience is that during periods of great industrial activity claims are not filed promptly. Conversely, in times of slack business conditions shippers work up their claims on past business and file them with carriers, even checking up shipments several years old, scrutinizing expense bills more closely, and filing claims for smaller amounts. This con-

Digitized by Google

dition, together with the fact that claim payments on the average are made about six months after the freight moves, accounts for the large payments during 1921, considering the reduction in business and the reduction in prices.

TABLE A144.—*Loss and damage claim payments, Class I railroads—Jan. 1, 1921, to Oct. 31, 1921, by commodities, with ratio for each commodity as compared with the total of all claim payments for the period.*

Commodities.	Total.	Ratio.	Commodities.	Total.	Ratio.
		Per cent.			*Per cent.*
Boots and shoes	$2,445,299	2.9	All other iron and steel articles	$1,562,762	1.8
Clothing, dry goods, and notions	7,223,416	8.6	Automobiles, trucks, and accessories	2,875,868	3.4
Butter, cheese, and dairy products	713,853	.9	Agricultural implements and vehicles	526,823	.6
Eggs	886,720	1.0	Cement, lime, plaster, clay, and their products	1,389,285	1.6
Fresh fruits and vegetables	12,088,510	14.3	Coal and coke	3,477,170	4.2
Live stock	3,013,817	3.5	Lumber and forest products, sash doors, and mill work	1,026,821	1.2
Meats, packing-house products, poultry, game, and fish	3,507,629	4.1	Petroleum and its products	1,174,258	1.4
Hides, leather, and wool	479,752	.6	Vegetable oil	500,628	.6
Grain	5,384,378	6.4	Machinery and hardware	2,527,202	2.9
Flour and other mill products	3,053,086	3.7	Canned goods	893,315	1.0
Sugar	2,179,225	2.6	Candy and confections	662,481	.9
Groceries	1,804,676	2.1	Silk (raw and manufactured)	138,696	.1
Liquors and other beverages	798,004	.9	Newsprint paper	323,896	.4
Tobacco, cigarettes, and cigars	3,167,947	3.7	All other commodities	12,956,239	15.4
Cotton	929,948	1.1	Miscellaneous charges	398,710	.5
Furniture (new)	2,415,513	2.9			
Household goods	1,291,856	1.5	Total	84,517,477	
Glass, glassware, and crockery	1,915,230	2.3			
Stoves, furnaces, radiators, and parts	784,437	.9			

For the year 1914 the loss and damage account amounted to $33,279,057; during 1919, $104,507,174; for 1920, $104,398,930; and for the first 10 months of 1921, $84,517,477. Adjusted to the entire year of 1921, allowing a conservative estimate of $6,000,000 monthly loss and damage for the last two months, the 1921 loss and damage claim account for the class 1 railroads will run very close to $96,000,000, or approximately 189 per cent greater than 1914. During this time commodity prices show an increase over 1914 of approximately 46 per cent. During 1914 the amounts paid out in claims for loss and damage by the class 1 railroads constituted 1.616 per cent of the total freight revenue received. For the year 1920 it constituted 2.42 per cent of the total freight revenue. For the year 1921, as estimated, such claims will amount to approximately 3.25 per cent of the total freight revenue. Table A144 shows the amount of loss and damage allocated to the various commodities transported for a period of 10 months, together with the percentage which each bears to the total payment. The largest single item of loss and damage occurred on fresh fruits and vegetables, to the amount of $12,088,510, or 14.3 per cent of the total loss and damage paid for the 10-month period.

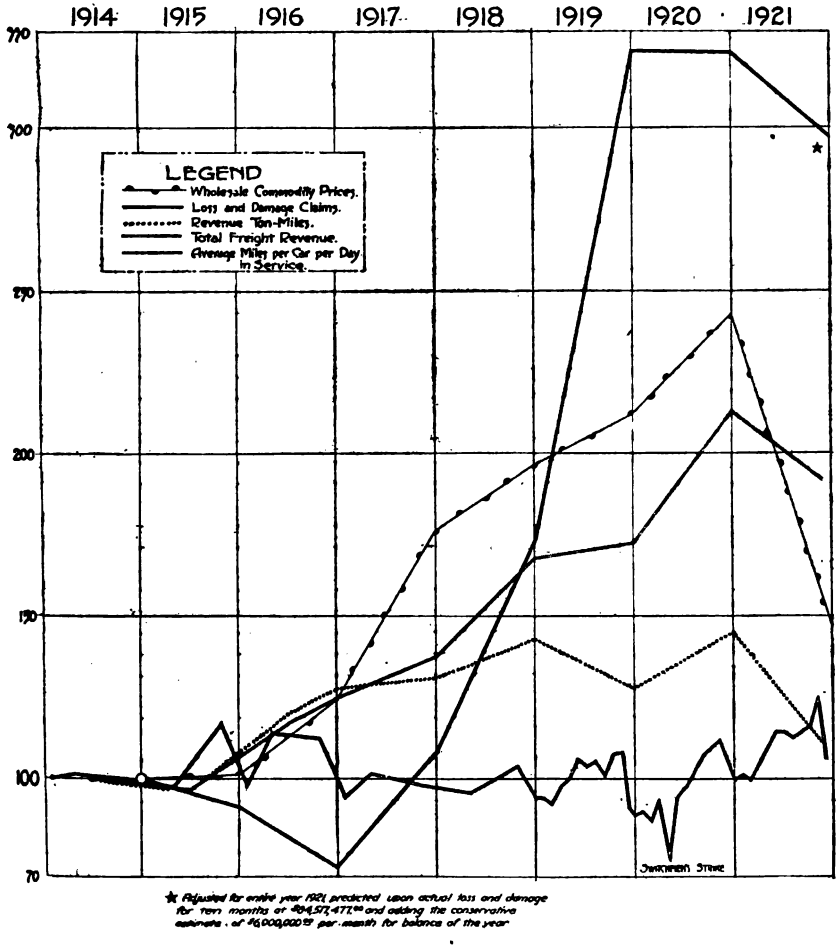
Table A145 shows a division of loss and damage claims for the first 10 months of 1921, classified by principal causes. The table also shows the loss and damage expenditures of class 1 railroads for the fiscal years 1914, 1915, and 1916 and the calendar years 1916, 1917, 1918, 1919, and 1920, also the total gross freight revenue for the same periods, together with the portion of each dollar of revenue required to liquidate the loss and damage claim account. Table A145 likewise shows payments by months for the calendar year 1921

Digitized by Google

(December omitted) and the percentage reduction for each month under the January, 1921, payment, which indicates that loss and damage claims are now rapidly on the decline. The payments in November, 1921, were 43.7 per cent less than in January, 1921. The Interstate Commerce Commission figures for November, 1921, show freight revenue $400,709,558 for class 1 railroads. The claim pay-

Chart A 120.

LOSS AND DAMAGE CLAIMS, STEAM RAILROADS (1914=100).



★ Adjusted for entire year 1921 predicated upon actual loss and damage for ten months or $94,571,471.00 and adding the conservative estimate of $10,000,000.00 per month for balance of the year

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

ments for that month were $6,441,924. The ratio was 1.608. The Interstate Commerce Commission figures for November, 1921, show freight revenue $342,024,698. The loss and damage payments for that month were $5,817,825. The ratio was 1.701. Assuming that the loss and damage payments in November approximate the payments per month that will be made throughout 1922, and that rev-

Digitized by Google

enues for the year 1922 will approximate $4,500,000,000, we find the ratio of loss and damage payments will be approximately 1½ per cent, which will be lower than the ratio of payments in 1914 and less than one-half the ratio of payments for 1921.

The percentage of paid loss and damage claims to the total gross freight revenue of the carriers over a period of years is as follows:

	Per cent.		Per cent.
1914	1.616	1918	1.623
1915	1.493	1919	2.949
1916	.912	1920	2.8
1917	1.244	1921	[1] 3.25

Chart A120 indicates the trend of loss and damage payments since 1914, with the price index of all commodities, the ton-miles of freight moved, the gross freight revenue, and the average miles per car per day of cars in service.

TABLE A145.—*Statement of freight loss and damage claims paid in first 10 months of 1921, classified by principal causes.*

[Average number of carriers reporting, 228.]

Unlocated loss:	
Entire package	$11,792,007
Other than entire package	6,516,077
Unlocated damage	12,245,245
Other damage:	
Rough handling of cars	12,325,186
Improper handling, loading, unloading, or stowing	1,844,392
Defective or unfit equipment	8,710,342
Temperature failures:	
Improper refrigeration or ventilation	2,226,821
Freezing or heater failure	987,104
Delay	9,106,121
Robbery:	
Entire package	3,760,514
Other than entire package	4,843,365
Concealed:	
Loss	1,169,687
Damage	1,948,995
Wreck	4,230,155
Fire or marine loss or damage	826,427
Error of employee	1,984,979
Grand total	[2] 84,517,477

Loss and damage freight expenditures, 1914–1920, Class I railroads, United States.

	Fiscal year.		
	1914	1915	1916
Loss and damage, freight (account 418)	$33,279,057	$29,528,016	$22,738,863
Freight revenue (rail line, account 101)	2,059,891,935	1,977,933,275	2,402,210,995
Portion of every dollar of freight revenue spent for loss and damage of freight	Cents. 1.616	Cents. 1.493	Cents. 0.947

[1] Estimated.

[2] Salvage deduction, $718,511.

Digitized by Google

Loss and damage freight expenditures, 1914–1920, Class I railroads, United States—Continued.

	Calendar year.				
	1916	1917	1918	1919	1920
Loss and damage, freight (account 418)	$23,346,965	$35,079,757	$55,852,797	$104,507,174	$104,398,930
Freight revenue (rail line, account 101)	2,560,988,111	2,819,956,215	3,440,741,970	3,543,266,303	4,311,171,037
Portion of every dollar of freight revenue spent for loss and damage of freight.	Cents. 0.912	Cents. 1.244	Cents. 1.623	Cents. 2.949	Cents. 2.422

Charges to freight loss and damage (account 418) in 1921 by roads reporting to freight claim division, American Railway Association, including all Class I carriers.

Months.	Carriers reporting.	Amount.	Reduction under January, 1921.	Months.	Carriers reporting.	Amount.	Reduction under January, 1921.
			Per cent.				Per cent.
January	228	$10,334,691	.....	June	229	$8,089,980	21.7
February (28 days)	230	8,846,943	14.4	July	230	8,004,007	22.6
March	223	9,580,536	7.3	August	228	7,723,270	25.3
April	212	9,281,165	10.2	September	225	6,768,641	34.5
May	222	8,333,312	19.4	October	228	6,441,924	37.7
				November	232	5,817,825	43.7

A study of Tables A144 and A145, which contain classified summaries by principal commodities and causes, indicates that the causes contributing to about 80 per cent of the total loss and damage payments are causes within the supervision of the carriers.

The carriers have regular committees organized for claim prevention who devote their entire time to this subject, inspecting, instructing, and otherwise assisting shippers and carriers to make delivery of shipments without loss or damage. Classification committees, cooperating with shippers, have adopted certain standard containers and outlined packing requirements which should assist materially in accomplishing the desired results.

The efforts now being made by the carriers to reduce loss and damage to goods in transit will without doubt much improve this deplorable situation. The cooperation of shippers with the carriers in this important matter will add materially to the progress being made. The commission believes that a concerted effort brought about through the establishment of joint shippers and carriers' committees will materially reduce this waste.

70678—H. Rept. 408, 67–1, pt 3——15

Digitized by Google

Chapter II.

TRANSPORTATION BY STEAM RAILROADS.

Prior to the advent of the steam railroads the early settlements of the United States were necessarily confined to the territory along the Atlantic seaboard and the Gulf coast, and they penetrated westward and northward to a limited extent along navigable rivers. Only the hardiest of the pioneers dared to settle far from these limited areas prior to the penetration by the railroads. The farmer in the far distant localities could find no remunerative market for his surplus products and in turn was obliged to pay almost prohibitive transportation charges for any supplies needed which the farm or the forest did not furnish him.

It is recorded that prior to the completion of the Erie Canal in October, 1825, it required 20 days to transport merchandise from New York to Buffalo and the charges were at the rate of $100 per ton, consequently any surplus products of the few farms then existing in western New York could not stand the transportation charges as their value was eaten up long before the journey was made. Thus the city of New York was unable to avail itself of the needed surplus grain raised within the State. Such as was transported from western New York was shipped in so-called "arks" by the rivers and found market in Philadelphia and Baltimore. Immediately upon the opening of the canal the time required for the journey was reduced to six days and the freight charges to $5 per ton.

The necessary limitations of space will not permit of giving here an extended history of the growth and development of the railroads. The subject is treated more at length in Chapter XII. Statistical tables appear in other parts of this report. The first railroad built in the United States was a short tram road of four miles built in 1826 for the transportation of granite to the harbor of Boston. Another tram road was built in 1827 for the transportation of coal from the pit at Mauch Chunk to the Lehigh Canal. In 1828 the first attempt was made to construct a railroad to carry both passengers and freight. A cornerstone was laid on the 4th of July, 1828, in Baltimore, which inaugurated the beginning of the great Baltimore & Ohio System. The laying of rails within the city of Baltimore was begun in 1829, and the first section of 15 miles was opened May 22, 1830. Although locomotive engines had been used for a short time prior to this in England, the Baltimore & Ohio continued for nearly a year after its opening to be operated by horse power.

The first steam locomotives were introduced on the American railroads in 1830, one of the first built in the United States being "The best friend of Charleston." for use on the South Carolina Railroad,

Digitized by Google

then in process of construction. Another was shortly thereafter built and placed on the lines of the Mohawk & Hudson in 1831. This engine weighed 3 tons. In 1831 steam locomotives were in use on the Baltimore & Ohio, the Mohawk & Hudson, and on the South Carolina Railroad. By 1833 the South Carolina Railroad had been opened for traffic its entire length of 133 miles and was then known as the "longest continuous line of railroad in the world." In 1833 the Baltimore & Ohio was extended as far as Harpers Ferry, 81 miles; and, in the same year, the Washington branch of 30 miles was completed. Railroad building was taken up generally and progressed at what then seemed a very rapid rate so that at the end of the year 1835 there were 1,098 miles in operation.

From that time forward the construction of railroads proceeded at the rate of about 400 miles per annum until 1842, and by the end of 1850 the total steam railroad mileage was 9,021, distributed as follows: The New England group, 2,507 miles; north Middle Atlantic group, 3,105 miles; in the States of Ohio, Michigan, Indiana, Illinois, and Wisconsin combined, 1,276 miles; in the South Atlantic group, 1,717 miles; and in the States of Kentucky, Alabama, Mississippi, and Louisiana, 416 miles. At this time, except for 111 miles of railroad in Illinois and 20 miles in Wisconsin, there was not 1 mile of railroad in any of the States which has since become the great granaries of this country.

A reference to the maps of the United States of about this date shows that the great West, with the exception of a few scattering villages on navigable streams and military posts, was uninhabited, generally speaking. A vast portion of it was designated as the Great American Desert, and most of the remainder was considered to be a practically unknown wilderness. Beginning with 1850 the railroads began to reach out into the Mississippi Valley States, and between that date and 1860 there were built in Missouri, Arkansas, Texas, and Iowa, 1,817 miles of road, and from that time forward the progress was most rapid until 1910. Vast areas of the so-called desert and wilderness were opened to settlement; immigration, which was running at a great rate, together with the pioneers from the States east of the Mississippi River, were rapidly settling in and building the foundations for this vast agricultural section.

In 1850 the entire population of the United States was 23,181,876. Of this total population the Northwestern States had only 198,291; the Pacific States, 117,271; and the Southwestern States, 1,166,080; a total for the States west of the Mississippi, exclusive of Louisiana, of 1,481,642, or only 6.4 per cent of the total. The area of this district was 2,094,405 square miles out of a total for the United States of 3,024,880, or 69.25 per cent. By 1870 the railroad mileage of the United States had grown to 52,922. Of this there had been built in the western district 11,563 miles since 1850, so that the West then had 22 per cent of the total mileage of the United States. The population had risen to 38,558,371 for the United States as a whole, and the western district contained at that date 6,150,154, or 16 per cent of the total.

The rapid growth in the settlement and increase in population was only made possible by the rapid extension of the railroads. Tables

Digitized by Google

showing the growth by States in each of the decades since 1830, and by years since 1910, as well as the population for each of the decades since 1830, are shown elsewhere in this report, from which comparisons may be made that demonstrate the extension of rail transportation and the manner in which the network of railroads has gradually covered every part of the valuable interior country.

In 1910, the western district contained 28 per cent of the entire population of the United States, and the mileage of railroads had grown to 112,986, or 47 per cent of the then total mileage within the United States. Without this rapid and general extension of the railroads no such phenomenal growth could possibly have taken place, because with the enormous distances between producing, manufacturing, and consuming centers any other mode of transportation would have been entirely too slow or too expensive to undertake the distribution of agricultural products and manufactures between them and give the opportunity for the necessary intercourse between the various sections of the country.

The following tables show the relative growth of railroad mileage and population of the United States, the figures for the territory west of the Mississippi being separately tabulated for the years 1850, 1870, 1890, and 1910:

Population and railroad mileage of the United States, 1850–1910.

POPULATION.

	1850	1870	1890	1910
Southwest	1,166,030	3,520,482	8,303,219	13,238,755
Northwest	198,291	1,800,613	5,680,206	7,175,[illegible]
Pacific States	117,271	829,059	2,323,259	5,177,[illegible]
Total West (exclusive of Louisiana)	1,481,642	6,150,154	15,656,776	25,591,[illegible]
Total United States	23,191,876	38,558,371	62,947,714	91,[illegible]
Per cent West	6.4	16	25	27.8
Area West (exclusive of Louisiana)	2,094,435	[1]	3,024,880	[2] 68.25

RAILROAD MILEAGE.

Southwest	.....	4,625	32,333	51,[illegible]
Northwest	.....	5,004	25,677	32,[illegible]
Pacific States	.....	1,934	11,622	28,[illegible]
Total West (exclusive of Louisiana)	.....	11,563	70,632	112,[illegible]
Total United States	9,021	52,922	163,605	266,[illegible]
Per cent West	.....	22	43	47
Population per mile of railroad in United States	2,571	729	385	343
Population per mile of railroad in West	.....	532	222	227

[1] United States. [2] Per cent West.

The viewpoint of the transportation situation as it appeared 50 years ago is reflected in part by the following extract from Poor's Manual of Railroads, 1871–72.

Digitized by Google

The railroad first constructed in the United States was the Baltimore & Ohio, of which 23 miles were opened for use in 1830. It was for two years thereafter worked by horsepower. The following statement will show the number of miles opened each year since that date:

Year.	Miles in operation.	Annual increase of mileage.	Year.	Miles in operation.	Annual increase of mileage.
1830	23	.....	1851	10,928	1,961
1831	95	72	1852	12,908	1,926
1832	229	134	1853	15,360	2,452
1833	380	151	1854	16,720	1,360
1834	633	253	1855	18,374	1,654
1835	1,098	265	1856	22,017	3,643
1836	1,273	175	1857	24,508	2,491
1837	1,497	224	1858	26,968	2,460
1838	1,913	416	1859	28,789	1,821
1839	2,302	389	1860	30,635	1,846
1840	2,818	515	1861	31,256	621
1841	3,535	717	1862	32,120	864
1842	4,026	491	1863	33,170	1,050
1843	4,185	159	1864	33,908	738
1844	4,377	192	1865	35,185	1,277
1845	4,633	256	1866	37,017	1,832
1846	4,939	297	1867	39,244	2,227
1847	5,599	669	1868	42,277	3,033
1848	5,996	397	1869	47,254	4,999
1849	7,365	1,369	1870	53,999	6,145
1850	9,021	1,656			

The number of miles constructed in the decade ending in 1840 was 3,513; in that ending with 1850, 5,508; in that ending with 1860, 21,614; and in that ending in 1870; 22,764. The greatest number of miles constructed in any one year was in that just passed, in which 6,145 miles were opened. The mileage constructed in 1869 and 1870 equaled 11,144 miles. The progress of railroads, as will be seen by reference to accompanying tables, was seriously interrupted by the war of secession. During the four year of its continuance only 3,273 miles were opened—2,872 miles less than were opened during the past year. In that period only a very small extent of mileage was constructed in the Southern States. Within the past two years, great progress has been made in these works in that section of the country.

In 1851 the tonnage transported by the railroads in the United States was about 5,000,000 tons. In 1870 this had risen to 72,500,000 tons, and for the year 1920 it was 1,256,379,734 tons. Fifty years ago the increase then shown was looked upon as extraordinary, as is shown in the following extract from Poor's Manual of Railroads, 1871–72:

This vast commerce has been wholly created by the reduction effected in the cost of transportation. The cost, for example, of transporting Indian corn and wheat over ordinary highways will equal 20 cents per ton per mile. At such a rate, as already shown, the former will bear transportation only 125 miles to market, where its value is 75 cents per bushel; and the latter only 250 miles where its value is $1.50 per bushel. With such highways only our most valuable cereals will have no commercial value outside of circles having radii of 125 and 250 miles, respectively. Upon a railroad the cost of transportation equals 1¼ cents per ton-mile. With such a work consequently the circle within which corn and wheat at the prices named will have a marketable value will be drawn upon radii of 1,600 to 3,200 miles, respectively. The area of a circle with a radius of 125 miles is 49,087 square miles; that of a circle upon a radius of 1,600 miles is about 160 times greater, or 8,042,406, square miles. Such a difference, enormous as it is, only measures the value of the new agencies employed in transportation and the results achieved compared with the old.

The value of the railroad service in making possible the growth not only of the population of the country but the extension of the farm areas, and particularly the ability to transport the enormous

Digitized by Google

and rapidly growing manufacturing products of the country, is clearly portrayed in the following table, which shows the number of manufacturing establishments, the capital and number of employees, the total wages paid, the cost of materials, and the wholesale value of the products for each decade from 1850 to 1920. It will be readily appreciated that no such growth could have been possible without proper instrumentalities of transportation such as has been furnished by the progressive steam railroads of the United States.

The influence on agriculture has been no less, as a comparison of the acreage under cultivation and the production from the years 1850 to the last report of the census, demonstrates. The influence of the railroads on the growing wealth of the country has been no less marked. Prior to 1860 a vast agricultural territory in the West, then unsettled, was for sale at $1.25 per acre, and found no buyers. The hardships to be met, the inability to transport surplus products from the farms at remunerative prices held no inducement for the settler, but with the advent of the railroads, or even the immediate prospect of railroads, lands which could not be sold at $1.25 per acre were rapidy purchased at $2.50 per acre and the values rose from that time forward as the railroads progressed to relatively enormous values.

Manufacturing industries in 1850, 1870, and 1890.

[From U. S. Census reports, 1890.]

	1850	1870	1890
Number of establishments	123,025	252,148	355,405
Capital employed	$533,245,352	$1,694,567,015	$6,130,397,705
Number of employees	957,059	2,053,996	4,476,894
Total wages paid	$236,755,464	$620,467,474	[1] $2,171,756,188
Cost of material	$555,123,822	$1,990,741,794	$5,082,658,225
Value of products	$1,019,106,616	$3,385,860,354	$9,056,706,025

[1] Prior to 1890, officers, clerks, and firm members not included (1890 wages, $331,988,206).

Manufacturing industries in the United States: Employees, wages, capital, total output value added by manufacture, and relation of capital to output, 1900, 1910, and 1920.[1]

[In "The Americas," vol. 7, No. 9, June, 1921.]

Census year.	Total output of manufacturers.	Number of wage earners.	Wages paid.	Average annual wage.	Stated capital employed.
1900	$11,407,000,000	4,713,000	$2,008,000,000	426	$9,813,000,000
1910	20,672,000,000	6,615,000	3,427,000,000	518	18,428,000,000
1920[1]	62,500,000,000	9,000,000	10,000,000,000	1,100	50,000,000,000

[1] 1920 figures are estimates except those of total output, which are official. Extract from article by O. P. Austin, statistician, The National City Bank of New York.

The total amount of freight revenues of the steam railroads of the United States in 1900 was $1,049,256,323, which was 9.2 per cent of the value of products of manufacture; in 1910 the freight revenue was $1,926,940,028, or 9.3 per cent; and in 1920 the total freight revenue of Class I roads was $4,317,608,483, adding to this 2.74 per cent as estimate for all roads other than Class I makes total freight charges $4,435,911,000 in 1920, or 6.9 per cent of the wholesale or factory value of products of manufacture.

The freight revenue shown above includes not only the transportation of raw materials of every kind handled but also the cost of transportation for final distribution to ultimate point of consumption.

Digitized by Google

Total production in bushels of the principal grain crops in the United States.

[Source: Agricultural Yearbook, 1920.]

Crop.	1849	1870	1890	1910	1920
Wheat	100,486,000	235,885,000	399,262,000	635,121,000	787,128,000
Corn	592,071,000	1,094,255,000	1,489,970,000	2,886,260,000	3,232,367,000
Oats	146,584,000	247,277,000	523,621,000	1,186,341,000	1,526,055,000
Rye	14,189,000	15,474,000	25,807,000	34,897,000	69,318,000
Barley	5,167,000	26,295,000	67,168,000	173,832,000	202,024,000
Buckwheat	8,957,000	9,842,000	12,433,000	17,598,000	13,789,000
Total	867,454,000	1,629,028,000	2,518,261,000	4,934,049,000	5,830,681,000

In 1850 there were only six States west of the Mississippi River—Arkansas, California (admitted 1850), Iowa, Louisiana, Missouri, and Texas. There were four Territories—Minnesota, New Mexico, Oregon, Utah, these including land that now is part of other States. The rest of the country west of the Mississippi was unorganized. The country east of the Mississippi was divided as it now is with the exception that West Virginia was part of Virginia.

Production, in bushels, of principal grain crops.[1]

[Source: S. B. Ruggles's tabular statements from 1840 to 1870 of the agricultural products of the United States, 1874, pp. 6, 12, 18, 24, and 30.]

	States east.	States west.		States east.	States west.
1850.			1870.		
Wheat	105,279,666	5,188,908	Wheat	198,373,461	89,384,403
Corn	522,038,161	70,485,713	Corn	537,073,219	223,846,520
Oats	138,726,083	7,849,962	Oats	122,023,543	60,074,914
Rye	14,108,048	75,255	Rye	15,571,231	1,343,730
Barley	5,114,531	52,409	Barley	16,486,022	13,275,293
Buckwheat	8,878,203	77,331	Buckwheat	9,566,358	256,356
	794,144,693	[2] 83,729,578		899,093,834	[3] 388,181,216

[1] Acreage figures not available. [2] 9½ per cent of total. [3] 30 per cent of total.

The summary of census of agriculture for the United States, 1919–20, gives the crop for the above six cereals for the entire United States:

	1909	1919
	Bushels.	*Bushels.*
Entire United States	4,460,425,870	4,657,125,900
For the western group of States	2,450,143,650	2,518,263,225
West per cent of total	54.9	54.1

Bulletin No. 861 of the Department of Agriculture, Statistics of Grain Crops, 1920, compiled in the Bureau of Crop Estimates, discloses the relative extension of farms since 1866 in tables giving the acreage of the principal grain crops. The summary for the years here selected shows the steady and rapid growth for the six cereals named.

Digitized by Google

	Crop acreage in—				
	1866	1870	1890	1910	1920
Corn	34,307,000	38,647,000	71,971,000	104,035,000	104,601,000
Wheat	15,424,000	18,993,000	36,087,000	45,681,000	57,198,000
Oats	8,864,000	8,792,000	26,431,000	37,543,000	43,323,000
Barley	493,000	1,109,000	3,135,000	7,743,000	8,053,000
Rye	1,543,000	1,176,000	2,142,000	2,185,000	5,043,000
Buckwheat	1,046,000	537,000	845,000	860,000	720,000
Total	61,682,000	69,254,000	140,611,000	198,052,000	219,971,000

NOTE.—Figures for 1850 are not available.

The increase in the wealth of the United States in the past 70 years has been marvelous and it has probably never been equaled in the history of any nation of the world.

Wealth of the United States.[1]

Year.	Amount.	Per capita.	Year.	Amount.	Per capita.
1850	$7,135,780,000	$307.69	1912	$187,739,071,090	$1,965.40
1870	30,068,518,000	779.83	1916	[2] 260,000,000,000	2,586.40
1890	65,037,091,000	1,035.57	1920	[3] 350,000,000,000	3,288.81
1900	88,517,307,000	1,164.79			

[1] These figures represent the true value of real and personal property, and covers continental United States. These returns are compiled by the Bureau of the Census, Department of Commerce, and are taken from p. 764 of the Statistical Abstract of the United States, 1920 (1850 to 1912, inclusive).
[2] Estimated by W. R. Ingalls in Annalist, Sept. 13, 1920, p. 324.
[3] From Commerce and Finance, Feb. 8, 1922, p. 240.

With the unprecedented growth in population and the marvelous extension of our manufacturing industries, together with the world-wide trade enjoyed by both our manufacturing and agricultural interests, the demands upon the farmer have continually grown, farm production has been pushed out toward the West and the greater areas which prior to 1850 were practically valueless. This growth has necessarily imposed upon the railroads an ever-increasing burden for the furnishing of the transportation facilities necessary to bring the products of the farm to the consuming centers in the industrial districts and in turn to bring the products of manufacturing industries to the farmer's door. This spread has been growing more marked as time has passed. Prior to 1850, when the most of our population was along the Atlantic seaboard, and the farmers were, because of lack of transportation facilities, necessarily in close proximity to the consuming centers, the necessary haul for the exchange of commodities was comparatively short. As the farmer moved toward the West the great center of population still remained in the northeastern part of the United States and the consumer had to draw his supplies on both sides from ever-increasing distances.

An excellent illustration of this is had in the lumber industry. Until a comparatively recent date the forests close to the consuming centers furnished all the needs, but as these forests were denuded the lumber needs had to be drawn, first from Michigan and Wisconsin, then from Minnesota, later from Montana, still later from Idaho and the extreme Western States of Washington, Oregon, and California, in a very large degree; and in the South from the sections along the Gulf coast, which also are rapidly being razed. Eventually this will mean that practically all our forest products will have to be trans-

Digitized by Google

ported a distance of more than 2,000 miles on the average, whereas in the early history of our country our needs for lumber were supplied within a few miles of the farms and consuming centers. No reliable records are available as to the average haul in the early period of our railroad building but it was necessarily short on the very large bulk of the commodities transported. As indicating the growth in this direction, the statistics for 1900 show an average haul for freight of 238 miles, and this had grown to an average haul of 326.2 miles in the year 1921. This clearly demonstrates the ever-widening range of distribution, which is brought about by the greater interchange of commodities and the demands of the people for products from far distant points.

Notwithstanding this ever-increasing demand, railroads have until in the past few years measurably kept pace with it and with the general growth, and have anticipated the growth of the country; in many instances opened new territory for settlement which did not give immediate promise of returns and reward. At the present time many sections of our country are not adequately supplied with rail transportation facilities. There are still vast areas which will, with the continuing growth of the population, require added facilities for transportation, but with reasonable promise of remuneration the roads may be relied upon to furnish such facilities as rapidly as they may be needed.

The railroads, aside from the carrying of this enormous tonnage of commodities in the interchange of the products of agriculture and manufacture, also facilitate business and social intercourse and travel for pleasure of the people of the United States by furnishing facilities for rapid and comfortable travel.

PHYSICAL PROPERTY—TRANSPORTATION SERVICE.

The purpose of this chapter is to place before Congress a summary of the extent and value of the physical properties of the carriers and to describe as accurately as possible the changes which have taken place during the past few years and the effect of such changes upon the present operation of the railroads and their relation to the public welfare.

The commission has prepared extensive data covering the character and extent of the physical properties of the steam railroads of the United States. Generally the information given covers all steam railroads, but when used for comparative purposes the statistics include only railroads with operating revenues in excess of $1,000,000 annually, classified as Class I carriers by the Interstate Commerce Commission and including in that classification between 96 and 98 per cent of the total steam railroad mileage of the country.

The tables and charts referred to herein were compiled from basic figures contained in the reports of the carriers to the Interstate Commerce Commission with certain exceptions as indicated.

Table B1 and chart B1 give among other things the total investment in road and equipment as carried upon the books of the carriers for each year, 1911 to 1920, inclusive. The valuation of railroad property now being conducted by the Interstate Commerce Commission will shortly provide a definite basis for the computation of income return. For the present purpose the figures indicated provide a guide.

Digitized by Google

TABLE B1.—*Property investment (book value) and operating income account of Class I railroads, 1911 to 1920.*

[Railroads having annual operating revenues above $1,000,000; excludes switching and terminal companies.]

	Item.	Fiscal year.					
		1911	1912	1913	1914	1915	1916
1	Property investment, Class I roads and their nonoperating subsidiaries (investment in road and equipment, exclusive of material and supplies) as of end of year	$14,246,167,475	$14,632,497,022	$15,284,763,489	$15,842,127,271	$16,257,146,632	$16,688,440,056
2	Investment in miscellaneous properties	$130,236,094	$128,299,674	$179,658,237	$194,065,698	$160,769,944	$182,077,321
3	Average miles represented by income account	215,145.70	218,133.50	222,744.79	225,445.49	228,433.59	230,508.35
4	Total operating revenues	$2,752,497,297	$2,805,006,544	$3,108,361,215	$3,031,326,963	$2,871,563,047	$3,381,507,866
5	Freight (accounts 101 and 121)	1,856,504,287	1,897,692,838	2,140,083,394	2,069,891,935	1,968,522,179	2,415,048,777
6	Passenger (accounts 102 and 122)	636,341,495	639,818,627	678,966,749	683,748,602	630,705,841	675,216,483
7	Mail (accounts 106 and 125)	49,325,286	49,529,279	49,711,893	53,965,955	56,984,233	60,151,392
8	Express (accounts 107 and 126)	69,331,172	71,773,138	78,544,017	74,416,658	68,969,507	80,890,375
9	All other revenue	140,995,057	146,192,662	161,055,162	159,303,813	126,381,287	150,290,839
10	Total operating expenses	1,902,994,333	1,959,094,811	2,173,463,563	2,203,423,312	2,021,160,614	2,210,892,786
11	Maintenance of way and structures	348,004,080	348,470,704	406,042,529	403,682,593	364,004,178	404,514,144
12	Maintenance of equipment	415,590,400	436,995,458	499,988,331	520,200,274	496,739,561	557,664,332
13	Traffic	57,462,938	59,047,064	61,451,485	62,366,351	59,403,419	60,633,984
14	Transportation (rail and water)	954,349,616	984,852,159	1,068,017,845	1,073,981,380	1,010,914,727	1,090,100,194
15	General	68,658,924	69,297,080	74,134,022	79,525,390	74,172,107	79,192,476
16	All other expenses	58,928,375	50,432,346	63,829,351	63,667,824	15,926,622	18,787,656
17	Operating ratio—per cent	69.14	69.84	69.92	72.69	70.39	65.38
18	Net operating revenue	849,502,964	845,911,733	934,897,652	827,903,151	850,402,433	1,170,705,080
19	Railway tax accruals:						
	State			113,660,997	130,795,433	129,618,030	139,558,970
	Federal			4,725,862	4,777,146	3,658,300	5,958,064
	Total	98,626,848	109,445,407	118,386,859	135,572,579	133,276,330	145,517,034
20	Uncollectible railway revenue					649,917	806,747
21	Railway operating income	750,876,116	736,466,326	816,510,793	692,330,572	716,476,186	1,024,381,299
22	Hire of equipment—net balance	Dr. 15,577,534	Dr. 15,772,338	Dr. 15,611,817	Dr. 17,686,287	Dr. 19,128,943	Dr. 23,564,582
23	Joint facility rents—net balance	Dr. 11,113,874	Dr. 12,209,605	Dr. 13,288,541	Dr. 13,626,128	Dr. 14,242,410	Dr. 15,943,758
24	Net railway operating income (standard return basis)	724,184,708	708,484,383	787,610,435	661,018,147	683,104,833	984,872,959
25	Rate of return on investment—per cent	5.08	4.84	5.15	4.17	4.20	5.90
26	Net railway operating income (standard return basis)	724,184,708	708,484,383	787,610,435	661,018,147	683,104,833	984,872,959
27	Other income (including miscellaneous operating income)	273,767,609	219,308,972	241,629,540	243,768,847	186,232,946	192,709,534
28	Total income	997,952,317	927,793,355	1,029,239,975	904,786,994	869,337,779	1,177,582,493
29	Rent for leased roads	124,960,314	129,046,148	133,018,154	122,592,248	122,528,657	139,215,095
30	Interest on funded debt	345,843,570	359,881,461	368,134,889	373,296,854	387,029,566	399,348,125

Digitized by Google

21	Interest on unfunded debt	18, 116, 229	16, 735, 942	23, 045, 616	35, 938, 511	27, 509, 366	15, 066, 312
22	Other deductions	19, 999, 890	21, 505, 611	19, 295, 321	22, 218, 263	16, 114, 112	20, 730, 088
23	Net income available for dividends, etc	499, 085, 309	400, 694, 198	485, 745, 946	350, 721, 618	316, 156, 078	608, 222, 893
24	Dividends declared out of income	202, 904, 143	244, 194, 977	289, 463, 076	215, 456, 843	168, 344, 407	194, 044, 513
25	Dividends declared out of surplus	134, 114, 582	96, 770, 678	82, 807, 330	160, 449, 248	91, 466, 063	97, 891, 858
26	Total dividends declared	337, 018, 724	330, 964, 655	372, 270, 406	376, 006, 735	259, 809, 520	291, 936, 371

Digitized by Google

TABLE B1.—*Property investment (book value) and operating income account of Class I railroads, 1911 to 1920*—Continued.

	Item.	Calendar year 1916	1917	1918	1919	1920	1921
1	Property investment, Class I roads and their nonoperating subsidiaries (investment in road and equipment, exclusive of material and supplies) as of end of year	$16,884,440,038	$17,762,152,127	$18,213,629,613	$18,529,749,653	[1] $19,134,000,000	[1] $19,694,622,226
2	Investment in miscellaneous properties	$180,296,066	$278,205,611	$257,796,557	$258,419,922	[1] $260,000,000	[1] $260,000,000
3	Average miles represented by income account	230,991.10	232,198.99	233,203.72	233,808.87	234,668.34	234,912.25
4	Total operating revenues	$3,596,865,766	$4,014,142,747	$4,880,953,480	$5,144,795,154	[2] $6,178,388,046	$5,517,017,000
5	Freight (accounts 101 and 121)	2,575,210,622	2,832,923,825	3,453,935,308	3,556,451,084	4,317,608,483	3,924,318,000
6	Passenger (accounts 102 and 122)	708,044,033	826,666,315	1,032,869,815	1,180,276,923	1,286,704,660	1,153,885,000
7	Mail (accounts 106 and 125)	61,223,671	58,805,723	53,537,403	57,510,421	[2] 151,521,728	95,824,000
8	Express (accounts 107 and 126)	90,176,198	106,952,283	126,331,714	127,630,576	143,686,718	104,578,000
9	All other revenue	162,211,242	188,794,601	214,279,240	222,926,150	278,866,457	238,412,000
10	Total operating expenses	2,357,398,412	2,829,325,124	3,982,068,197	4,399,715,515	5,831,465,116	4,562,155,000
11	Maintenance of way and structures	421,775,812	442,109,862	649,794,953	772,186,045	1,032,490,872	757,128,000
12	Maintenance of equipment	595,566,336	685,428,913	1,103,031,350	1,226,532,195	1,592,969,670	1,248,218,000
13	Traffic	62,839,996	64,985,070	48,713,289	47,673,883	74,517,979	84,139,000
14	Transportation (rail and water)	1,173,987,775	1,515,988,879	2,029,459,671	2,168,646,844	2,905,127,875	2,264,770,000
15	General	84,418,107	95,933,290	118,432,684	141,853,744	172,615,445	166,374,000
16	All other expenses	18,810,386	24,879,110	32,636,250	42,822,804	53,743,275	41,526,000
17	Operating ratio—per cent	65.54	70.48	81.58	85.52	94.38	86.69
18	Net operating revenue	1,239,467,354	1,184,817,623	898,885,283	745,079,639	346,922,930	954,862,000
19	Railway tax accruals:						
	State	144,661,635	155,564,040	169,872,393	190,437,274	223,291,201	.....
	Federal	12,451,737	57,642,722	52,299,466	40,843,549	48,619,308	.....
	Total	157,113,372	213,206,762	222,171,859	231,280,823	271,910,509	276,724,000
20	Uncollectible railway revenue	797,486	700,090	613,821	916,889	1,311,384	1,945,000
21	Railway operating income	1,081,556,496	970,197,438	675,096,083	511,561,354	73,701,037	676,193,000
22	Hire of equipment—net balance	Dr. 23,767,262	Dr. 17,999,098	Dr. 15,676,577	Dr. 33,488,823	Dr. 52,039,255	Dr. 52,970,000
23	Joint facility rents—net balance	Dr. 17,704,717	Dr. 18,129,570	Dr. 20,850,903	Dr. 23,087,578		Dr. 22,817,000
24	Net railway operating income (standard return basis)	1,040,084,517	934,068,770	638,568,603	454,984,953	21,661,782	600,406,000
25	Rate of return on investment—per cent	6.16	5.26	3.51	2.46	0.11	.....
26	Net railway operating income (standard return basis)(corporate)	1,040,084,517	934,068,770	3,333,361	1,216,257	66,162,719	.....
27	Other income (including miscellaneous operating income)	210,066,579	233,252,283	[3] 1,050,799,810	[3] 1,076,254,931	[3] 987,923,458	.....
28	Total income	1,250,151,396	1,167,321,053	1,054,133,171	1,077,471,188	1,054,086,177	.....
29	Rent for leased roads	158,377,958	132,082,177	126,977,239	123,276,608	127,260,760	.....
30	Interest on funded debt	406,667,567	403,305,438	396,465,997	404,089,456	427,402,263	.....
31	Interest on unfunded debt	14,854,425	15,704,857	29,933,496	42,722,596	48,418,687	.....
32	Other deductions	23,370,773	23,197,975	114,211,187	60,553,271	35,382,496	.....
33	Net income available for dividends, etc	646,880,673	592,030,606	386,545,252	446,829,257	415,621,972	.....
34	Dividends declared out of income	187,985,358	220,822,373	214,077,008	213,960,125	179,116,061	.....

Digitized by Google

36	Total dividends declared	306,176,937	320,395,779	275,336,547	278,516,908	271,715,609	

[1] Partially estimated.

[2] Total operating revenue and mail revenue for the year 1920 includes $64,508,260 of mail pay applicable to the years 1917, 1918, and 1919, of which $7,584,084 was earned in 1917, approximately $30,000,000 in 1918 and $26,924,176 in 1919.

[3] "Other income" for the years 1918, 1919, and 1920 includes the following approximated accounts of Government compensation: 1918, $837,000,000; 1919, $904,000,000; 1920, $730,000,000.

NOTE.—Total operating revenues and expenses for the years 1911 to 1914, inclusive, as shown above, include returns of "outside operations." Data for the years 1918, 1919, and 1920 represent the combined results of the Federal and corporate operations of the roads under Federal control, also data for Class I roads not under Federal control, but do not take into account the general administrative expenses of the U. S. Railroad Administration.

Net railway operating income (item 26), for years 1918 and 1919 represents the item for "noncontrolled" roads only; for 1920 this item does not include the income of controlled roads for January and February.

Digitized by Google

TABLE B2.—*Per cent of annual increase and increase over 1911 of operating revenues, operating expenses, income account, Class I railways.*

	Fiscal years.									
	1912		1913		1914		1915		1916	
	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.
Operating revenues:										
Miles represented		1.4	2.11	3.5	1.21	4.6	1.32	6.2	0.91	7.1
Freight		2.2	12.77	15.2	[1] 3.75	11	[1] 3.47	7.1	21.45	30.1
Passenger		.5	6.12	7.5	.70	.89	[1] 7.76	.89	7.06	6.1
Mail		.4	.37	.78	8.56	9.4	5.59	15.5	5.56	21.9
Express		3.5	9.43	13.3	[1] 5.26	.53	[1] 7.32	.53	17.28	16.7
All other		3.7	10.16	14.2	[1] 1.09	13	[1] 20.67	10.4	18.92	6.6
Total		1.9	10.81	12.9	[1] 2.34	10.1	[1] 5.28	4.3	17.76	22.9
Operating expenses:										
Miles represented		1.4	2.11	3.5	1.21	4.6	1.32	6.2	.91	7.1
Maintenance way and structure		.1	16.5	16.7	[1] .6	16	[1] 9.9	4.6	11.1	16.2
Maintenance of equipment		5.2	14.4	20.3	4	25.2	[1] 4.5	19.5	12.3	34.2
Traffic		2.8	4.1	6.9	1.5	8.5	[1] 4.8	3.4	2.1	5.5
Transportation		3.2	8.4	11.9	.5	12.5	[1] 5.9	5.9	7.8	14.2
General		.9	6.9	8	7.2	15.8	[1] 6.8	8	6.7	15.3
All other expense		2.6	5.6	8.3	[1] 3	8	[1] 75	[1] 72.9	17.9	[1] 68.1
Total		2.9	10.9	14.2	1.4	15.8	[1] 8.3	6.2	9.4	16.2
Income account:										
Miles represented		1.4	2.11	3.5	1.21	4.6	1.32	6.2	.91	7.1
Property investment		2.7	4.4	7.3	3.6	11.2	2.6	14.1	2.6	17.1
Net operating revenue		[1] .4	10.5	10.1	[1] 11.5	[1] 2.6	2.7	.11	37.6	37.8
Taxes—[2]										
State						[2] 15	[1] 9	[2] 14	7.6	[2] 22.7
Federal						[2] 9	[1] 25	[1] [2] 22.6	62.8	[2] 26
Total		11	8.1	20	14.5	37.5	[1] 1.7	35.1	9.2	47.5
Uncollectible railway revenue									24.1	24.1
Operating income		[1] 1.9	10.9	8.7	[1] 15.1	[1] 7.8	3.5	[1] 4.6	42.9	36.4
Hire of equipment and joint facilities		4.8	3.2	8.3	8.3	17.3	6.6	25.1	18.4	48
Net operating income		[1] 2.2	11.2	8.8	[1] 16.1	[1] 8.7	3.3	[1] 5.7	44.2	36

[1] Denotes decrease.
[2] Increases and decreases of these items are based on year 1913.

Digitized by Google

	Calendar years.									
	1916		1917		1918		1919		1920	
	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.
Operating revenues:										
Miles represented	0.21	7.4	0.52	7.9	0.43	8.4	0.26	8.7	0.36	9.1
Freight	6.63	38.7	10.00	52.6	21.92	86	2.97	91.6	21.40	132.6
Passenger	4.86	11.3	16.75	29.9	31.04	62.3	14.27	85.5	9.01	102.2
Mail	1.78	24.1	8.44	19.2	25.83	8.5	1.07	16.6	3.05	207.2
Express	11.43	30.1	18.60	54.3	18.12	82.2	1.03	84.1	12.58	107.2
All other	7.93	15	16.38	33.9	13.49	52	4.03	58.1	25.09	97.8
Total	6.36	30.7	11.81	45.8	22.11	77.3	5.31	86.9	18.21	124.5
Operating expenses:										
Miles represented	.21	7.4	.52	7.9	.43	8.4	.26	8.7	.36	9.1
Maintenance way and structure	4.2	21.2	4.8	27	46.9	86.7	18.8	121.9	33.7	196.7
Maintenance of equipment	6.8	43.3	15.1	64.9	60.9	165.4	11.2	195.1	29.8	283.3
Traffic	3.6	9.4	3.4	13.1	[1] 25.1	[1] 15.2	[1] 2.2	[1] 17.3	56.3	29.7
Transportation	7.6	23	29.1	58.9	33.8	112.7	6.9	127.2	33.9	204.4
General	6.6	23	13.6	39.7	23.4	72.5	19.7	106.6	21.6	151.4
All other expense	.1	[1] 68.1	32.2	[1] 57.8	31.1	[1] 44.6	31.2	[1] 27.3	25.5	[1] 8.8
Total	6.6	23.9	20	48.7	40.7	109.3	10.4	131.2	32.5	206.4
Income account:										
Miles represented	.21	7.4	.52	7.9	.43	8.4	.26	8.7	.36	9.1
Property investment	1.1	18.5	5.1	24.7	2.5	27.8	1.7	30.1	8.2	34.3
Net operating revenue	5.8	45.9	[1] 5.5	39.5	[1] 24.2	5.8	[1] 17.2	[1] 12.3	[1] 53.5	[1] 59.2
Taxes—										
State	3.6	[2] 27.2	7.5	[2] 36.9	9.2	[2] 49.4	12.1	[2] 67.5	17.3	[2] 96.4
Federal	108.9	[2] [1] 63.4	362.9	[2] 1,119.6	[1] 8.1	[2] 1,106.6	[1] 22	[2] 864.2	19	[2] 1,028.7
Total	7.9	59.3	35.7	116.2	4.2	125.3	4.1	134.5	17.5	175.7
Uncollectible railway revenue	[1] 1.2	22.7	[1] 12.3	7.7	[1] 12.4	[1] 5.6	49.4	41.1	43	101.8
Operating income	5.6	44	[1] 10.3	29.2	[1] 30.5	[1] 10.1	[1] 24.3	[1] 31.9	[1] 85.6	[1] 90.2
Hire of equipment and joint facilities	4.9	55.4	[1] 12.9	35.4	1.1	36.9	54.8	112	[1] 8.1	95
Net operating income	5.6	43.6	[1] 10.2	29	[1] 31.6	[1] 11.9	[1] 28.8	[1] 37.2	[1] 52.4	[1] 97

[1] Denotes decrease.
[2] Increases and decreases of these items are based on year 1913.

Digitized by Google

Table B2 and charts B1, B2, and B3 give the per cent of annual increase or decrease of investment in road and equipment and of the several items of revenue and expenses and income accounts. It is not possible to segregate the cost of road and the cost of equipment. The investment account will, therefore, be treated as a whole and the various physical quantities, such as mileage and equipment, will be discussed in relation to the transportation requirements of the country and the use made of the facilities afforded by the rail carriers.

Chart B4 and the supporting figures shown in Table B3 indicate graphically the relative increase in property investment in road and equipment indexed to the year 1890, which is the first year for which the statistics were available, the revenue ton-miles and the revenue passenger-miles for each $100 of property investment, the revenue passenger-miles, and the revenue ton-miles, and the receipts per passenger-mile and per ton-mile. These statistics show that for every $100 investment in property reported by the railroads the performance in 1890 was 983 tons of freight carried 1 mile, and also 153 passengers carried 1 mile. The railroads carried for every $100 of property investment in 1920, 2,063 tons of freight 1 mile and 231 passengers 1 mile, an increase of 110 per cent in freight and 50 per cent in passenger traffic. The increase in both property investment and traffic is as follows:

	Property investment.	Tons 1 mile.	Passengers 1 mile.
1890	$7,755,000,600	76,207,000,000	11,848,000,000
1920	19,839,000,000	410,306,206,802	46,848,667,987
Increase	12,084,000,000	334,099,206,802	35,000,667,987
Ratio of increase.....per cent..	155.82	438	295

This is a measure of the efficiency of the railroads in the aggregate. The increase in the service rendered and the corresponding increase in efficiency is clearly marked. For the most part this increase is due to a vast improvement in operating methods made possible not alone by new mechanical devices but by a better knowledge and capacity for intense application upon the part of the railroad managers and the employees.

Digitized by Google

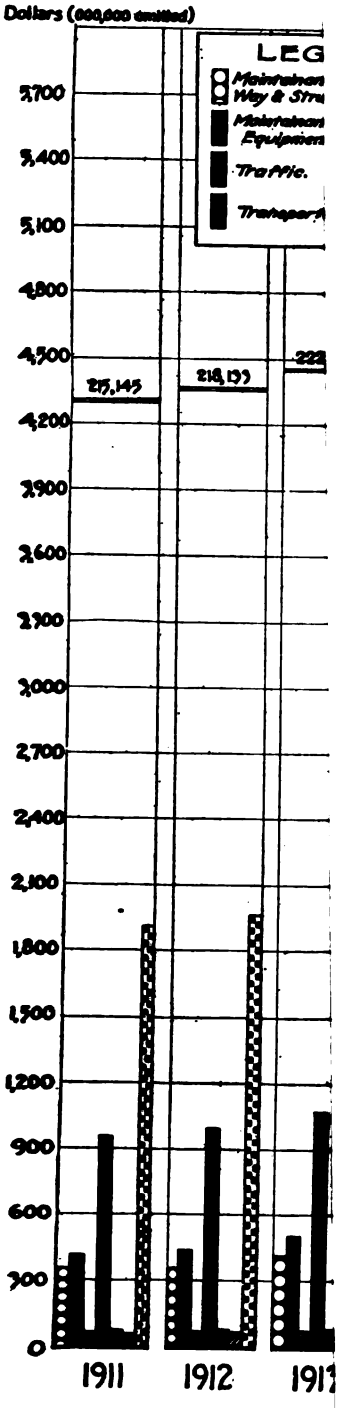
NOTE.—Property investmen

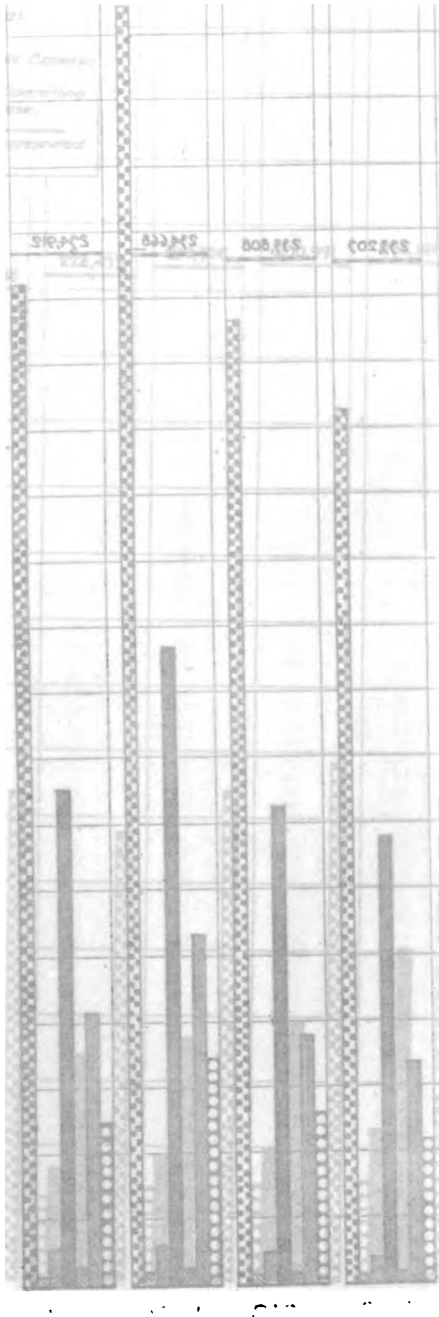
SCALE: 1-inch.

Digitized by Google

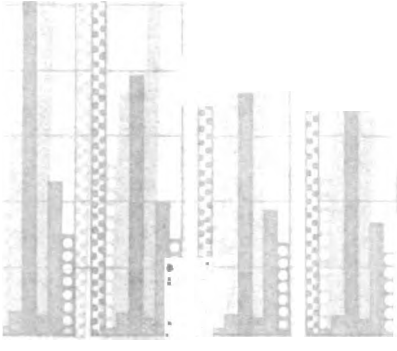
Digitized by Google

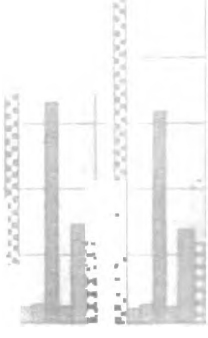
OPERATION, STEAM RAILROADS



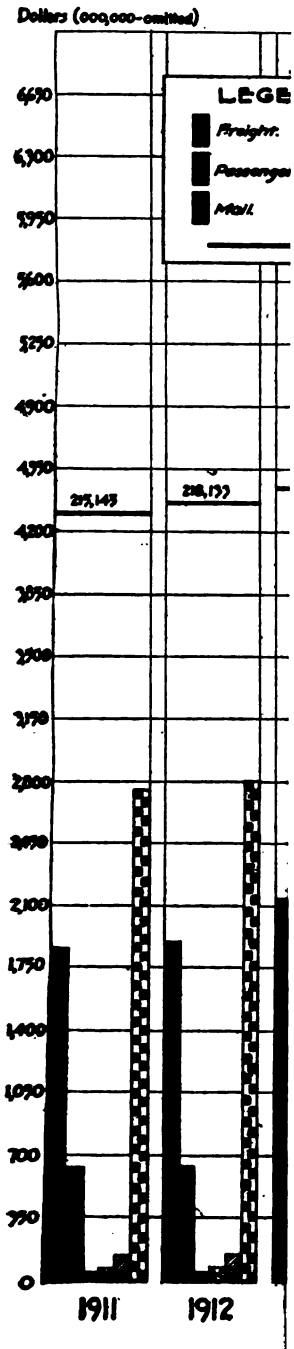


Digitized by Google





Digitized by Google



Digitized by Google

Digitized by Google

TABLE B3.—*Units of traffic per $100 of investment of all roads, United States.*

Year.	Property investment (in millions).	Revenue, ton-miles (in millions).	Revenue, passenger-miles (in millions).	Units of traffic per $100 of investment.	
				Revenue, ton-miles.	Revenue, passenger-miles.
June 30—					
1890	7,755	76,207	11,848	983	153
1891	8,198	81,074	12,844	989	157
1892	8,564	88,241	13,363	971	156
1893	8,938	93,588	14,229	1,047	159
1894	9,073	80,235	14,289	884	158
1895	9,203	85,228	12,188	926	132
1896	9,500	95,328	13,049	1,003	137
1897	9,709	95,139	12,257	980	126
1898	9,761	114,078	13,380	1,169	137
1899	9,962	123,667	14,591	1,241	147
1900	10,263	141,599	16,038	1,380	156
1901	10,405	147,077	17,354	1,414	167
1902	10,658	157,289	19,690	1,476	185
1903	10,974	173,221	20,916	1,579	191
1904	11,512	174,522	21,923	1,516	190
1905	11,951	186,463	23,800	1,560	199
1906	12,420	215,878	25,167	1,738	213
1907	13,030	236,601	27,719	1,816	213
1908	13,214	218,382	29,083	1,653	220
1909	13,609	218,803	29,109	1,608	214
1910	14,558	255,017	32,338	1,752	222
1911	15,612	253,784	33,202	1,626	213
1912	16,005	264,081	33,132	1,650	207
1913	16,589	301,730	34,673	1,819	209
1914	17,154	288,637	35,357	1,683	206
1915	17,441	277,135	32,475	1,589	186
1916	17,689	343,477	34,309	1,942	194
Dec. 31—					
1916	17,843	366,174	35,220	2,052	197
1917	18,574	398,263	40,100	2,144	216
1918	18,985	408,778	43,212	2,153	228
1919	19,300	367,161	46,838	1,902	243
1920	19,839	413,674	47,366	2,085	239

NOTE.—Returns prior to 1908 include returns of switching and terminal companies. Property investment does not include property investment of some proprietary companies which do not render annual reports, notably the proprietary roads in the Baltimore & Ohio system. They also include some duplications in the Atchison, Topeka & Santa Fe system. If these facts were taken into account, the total shown for 1919, as compiled in a special statement, would be increased to approximately $19,565,646,681.

Table No. B4 gives the population of the United States by States, the area of each State, the population of the United States per square mile of area, and the population per mile of railroad for each decade beginning with 1830.

Table No. B5 gives the mileage of railroads by States, beginning with the year 1830, when there were but 23 miles, to the year 1919, with a total of 253,152 miles of line.

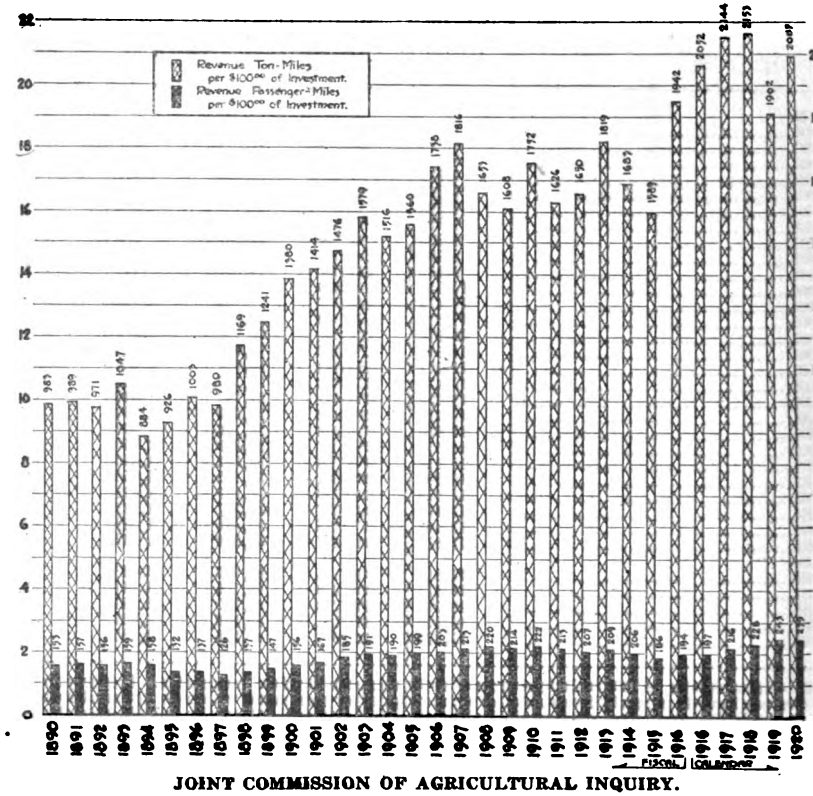
Table No. B6 gives the mileage of Class I, II, and III railroads segregated as to single-track mileage, second and third, and other main track mileage and yard track and sidings, together with the mileage operated by the railroads under trackage rights.

Table No. B7 indicates the mileage of Class I carriers, together with the percentage of annual increase under the various classifications. This increase is graphically portrayed in chart No. B5, which gives the mileage of first main tracks, the mileage of second main tracks, of third main tracks, all other main tracks, and yard tracks and sidings.

Digitized by Google

Chart B 4.

SERVICE PERFORMED PER ANNUM IN FREIGHT AND PASSENGERS TRANSPORTED BY RAILROADS FOR EACH $100 OF INVESTMENT, 1890 TO 1920.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

TABLE B6.—*Mileage Class I, II, and III roads, United States.*

[Excluding switching and terminal companies.]

Year.	Single-track mileage.	Second, third, and all other main tracks.	Yard tracks and sidings.	Total, all tracks.	Trackage rights included in single-track mileage.	Single-track mileage, excluding trackage rights.
June 30—						
1890	156,404	9,760	33,712	199,876	3,245	153,159
1895	177,746	12,349	43,181	233,276	4,287	173,459
1900	192,556	14,075	52,153	258,784	5,680	186,876
1905	216,974	19,881	69,942	306,797	7,569	209,405
1910	240,831	25,354	85,582	351,767	10,357	230,474
1911	246,238	27,613	88,974	362,825	11,009	235,229
1912	249,852	29,367	92,019	371,238	11,402	238,450
1913	253,470	30,827	95,211	379,508	11,637	241,833
1914	256,547	32,376	98,285	387,208	11,723	244,824
1915	257,569	33,662	99,910	391,141	11,280	246,289
1916	259,211	33,864	101,869	394,944	11,856	247,355
Dec. 31—						
1916	259,705	34,325	102,984	397,014	11,977	247,728
1917	258,705	35,066	105,582	400,353	[1] 11,946	246,759
1918	258,507	36,228	107,608	402,343	[1] 11,891	246,616
1919	258,525	36,730	108,637	403,892	[1] 11,892	246,633
1920	259,582	36,657	109,592	405,831	[1] 11,941	247,641

[1] Partly estimated.

Digitized by Google

TABLE B7.—*Mileage by classes, per cent of annual increase, and increase over 1911, Class I railroads.*

Year.	Road mileage.			Second main track.			Third main track.			All other main track.			Yard, tracks, and sidings			Total all tracks.		
	Miles.	Per cent of increase.		Miles.	Per cent of increase.		Miles.	Per cent of increase.		Miles.	Per cent of increase.		Miles.	Per cent of increase.		Miles.	Per cent of increase.	
		Annual.	Over 1911.		Annual.	Over 1911.		Annual.	Over 1911.		Annual.	Over 1911.		Annual.	Over 1911.		Annual.	Over 1911.
June 30—																		
1907	[1] 227,454.83	.....	.....	19,420.82	.....	.....	1,960.42	.....	.....	1,389.73	.....	.....	77,749.46	.....	.....	327,975.26	.....	.....
1908	[1] 230,494.02	1.3	.....	20,209.05	4.0	.....	2,081.16	6.1	.....	1,408.99	1.3	.....	75,452.64	[2] 3.0	.....	329,645.86	0.5	.....
1909	[1] 235,402.09	2.1	.....	20,949.41	3.6	.....	2,169.55	4.2	.....	1,453.56	3.1	.....	82,376.63	9.1	.....	342,351.24	3.8	.....
1910	[1] 240,830.75	2.3	.....	21,658.74	3.3	.....	2,206.39	1.6	.....	1,488.78	2.4	.....	85,581.93	3.8	.....	351,756.69	2.7	.....
1911	216,877.50	.....	.....	23,266.35	.....	.....	2,409.82	.....	.....	1,747.10	.....	.....	84,499.43	.....	.....	328,800.20	.....	.....
1912	220,062.56	1.4	1.4	24,720.60	6.2	6.2	2,506.84	4.0	4.0	1,902.74	8.9	8.9	87,261.85	3.2	3.2	336,454.59	2.3	2.3
1913	224,235.66	1.9	3.3	26,036.75	5.3	11.9	2,585.31	3.1	7.3	1,963.48	3.1	12.3	90,510.71	3.7	7.1	345,331.91	2.6	5.0
1914	226,999.20	1.2	4.6	27,379.04	5.1	17.6	2,690.46	4.0	11.6	2,070.83	5.4	18.5	93,394.17	3.1	11.1	352,533.70	2.0	7.2
1915	228,989.03	.8	5.5	28,444.28	3.9	22.2	2,709.35	.7	12.4	2,282.22	10.2	30.6	95,094.78	1.8	12.5	357,519.66	1.4	8.7
1916	231,263.98	.9	6.6	28,732.50	1.0	23.4	2,725.58	.5	13.1	2,198.34	[2] 3.7	25.8	97,198.95	2.2	15.0	362,119.35	1.2	10.0
Dec. 31—																		
1916	231,674.09	.1	6.8	29,222.87	1.7	25.6	2,716.23	[2] .4	12.7	2,189.78	[2] .4	25.3	98,334.25	1.1	16.3	364,137.22	.5	10.7
1917	232,697.09	.4	7.2	29,912.58	2.4	28.5	2,774.58	2.1	15.1	2,189.87	.....	25.3	101,108.43	2.8	19.6	368,682.55	1.2	12.1
1918	233,144.58	.2	7.5	30,982.40	3.5	33.1	2,817.73	1.5	16.9	2,229.83	1.8	27.6	103,262.92	2.1	22.2	372,437.46	1.0	13.2
1919	234,363.36	.5	8.0	31,379.26	1.2	34.8	2,920.20	3.6	21.2	2,268.23	1.7	29.8	104,493.15	1.1	23.6	375,424.20	.8	14.1
1920	235,237.41	.3	8.4	31,280.21	[2] .4	34.4	2,930.92	.3	21.6	2,287.83	.8	30.9	105,255.70	.7	24.5	376,992.07	.4	14.6

[1] Includes all roads reporting, but not switching and termina lcompanies.
[2] Decrease.

Digitized by Google

During the past decade the mileage of first main track increased only 8.4 per cent, the mileage of second main track 34.4 per cent, of third main track 30.9 per cent. The mileage of yard tracks and sidings increased 24.5 per cent, and in this connection it should be understood that any increase in the mileage of yard tracks and sidings adds more to the available facilities than an equivalent mileage of main tracks. The inference which may be clearly drawn is that the carriers have attempted to improve existing facilities rather than extend their lines into new territory. The necessity for an increase in yard tracks and sidings has been recognized for a number of years. As the volume of traffic handled increases in density the need for additional yard tracks in the terminals, longer sidings for meeting and passing trains between terminals become apparent. The increase in train loading and longer trains require a commensurate increase in passing tracks or sidings, and on the other hand the increase in train loading by reducing the number of units in single-track districts of dense traffic makes possible a postponement of heavy expenditures for second main tracks.

Digitized by Google

TABLE B8.—*Freight and passenger traffic of Class I railroads.*

[Excludes switching and terminal companies.]

	Fiscal years ended June 30—					
	1911	1912	1913	1914	1915	1916
Revenue tons transported (including tons from connections):						
Products of agriculture	158,270,548	169,225,430	195,506,939	191,149,819	214,541,542	226,329,842
Animals and products	39,382,378	41,379,739	43,716,156	44,904,388	43,977,630	49,622,993
Products of mines	837,133,348	880,799,044	1,014,424,510	985,220,118	881,160,472	1,122,304,897
Products of forests	152,169,121	145,454,191	180,549,933	175,189,309	150,783,578	179,828,332
Manufactures and miscellaneous	317,470,824	327,710,999	379,612,468	354,194,899	311,522,443	424,161,759
Merchandise—all less than carload freight	57,447,821	62,695,021	73,505,568	66,812,849	78,606,604	88,428,833
Tons unassigned as to commodity	62,519,598	57,730,324	27,685,352	25,744,674	4,067,248	2,416,101
Total revenue tons transported	1,624,393,638	1,684,994,748	1,915,001,926	1,843,216,056	1,684,659,517	2,093,092,757
Nonrevenue tons carried (company freight)	[1] 199,800,000	[1] 207,254,000	[1] 235,545,000	[1] 226,716,000	220,139,194	244,387,960
Per cent of annual increase		3.7	13.7	[2] 3.8	[2] 2.9	11.0
Per cent increase over 1911		3.7	17.9	13.5	10.2	22.3
Revenue ton-miles	249,843,166,302	259,981,628,198	297,722,538,693	284,924,749,718	273,913,006,569	339,870,323,675
Per cent of annual increase		4.1	14.5	[2] 4.3	[2] 3.9	24.1
Per cent increase over 1911		4.1	19.2	14.0	9.6	36.0
Nonrevenue ton-miles	[1] 25,459,000,000	[1] 26,492,000,000	[1] 30,337,000,000	[1] 29,033,000,000	28,873,493,885	33,645,986,681
Per cent of annual increase		4.1	14.5	[2] 4.3	[2] .55	16.5
Per cent increase over 1911		4.1	19.2	14.0	13.4	32.2
Total net ton-miles	275,302,166,302	286,473,628,198	328,059,528,693	313,957,749,718	302,786,500,454	373,516,310,356
Revenue passengers carried	938,655,719	944,265,173	983,692,468	1,002,350,385	936,368,539	968,887,957
Per cent annual increase		.60	4.2	10.2	[2] 6.6	3.5
Per cent increase over 1911		.60	4.8	10.7	[2] .25	3.2
Revenue passenger-miles	32,371,444,793	32,316,262,549	33,875,085,958	34,566,985,414	31,789,928,187	33,645,908,150
Per cent annual increase		[2] .18	4.8	2.0	[2] 8.0	5.8
Per cent increase over 1911		[2] .18	4.6	6.8	[2] 1.8	3.9
Revenue ton-miles per mile of road (freight density)	1,161,164	1,191,885	1,335,410	1,262,636	1,199,093	1,474,438
Revenue passenger-miles per mile of road (passenger density)	151,123	149,442	152,126	153,369	139,226	146,029
Average haul:						
Revenue ton	258.81	261.02	259.99	260.19	275.80	276.88
Nonrevenue ton	127.42	127.82	128.79	128.05	131.16	137.67

Digitized by Google

TABLE B8.—*Freight and passenger traffic of Class I railroads*—Continued.

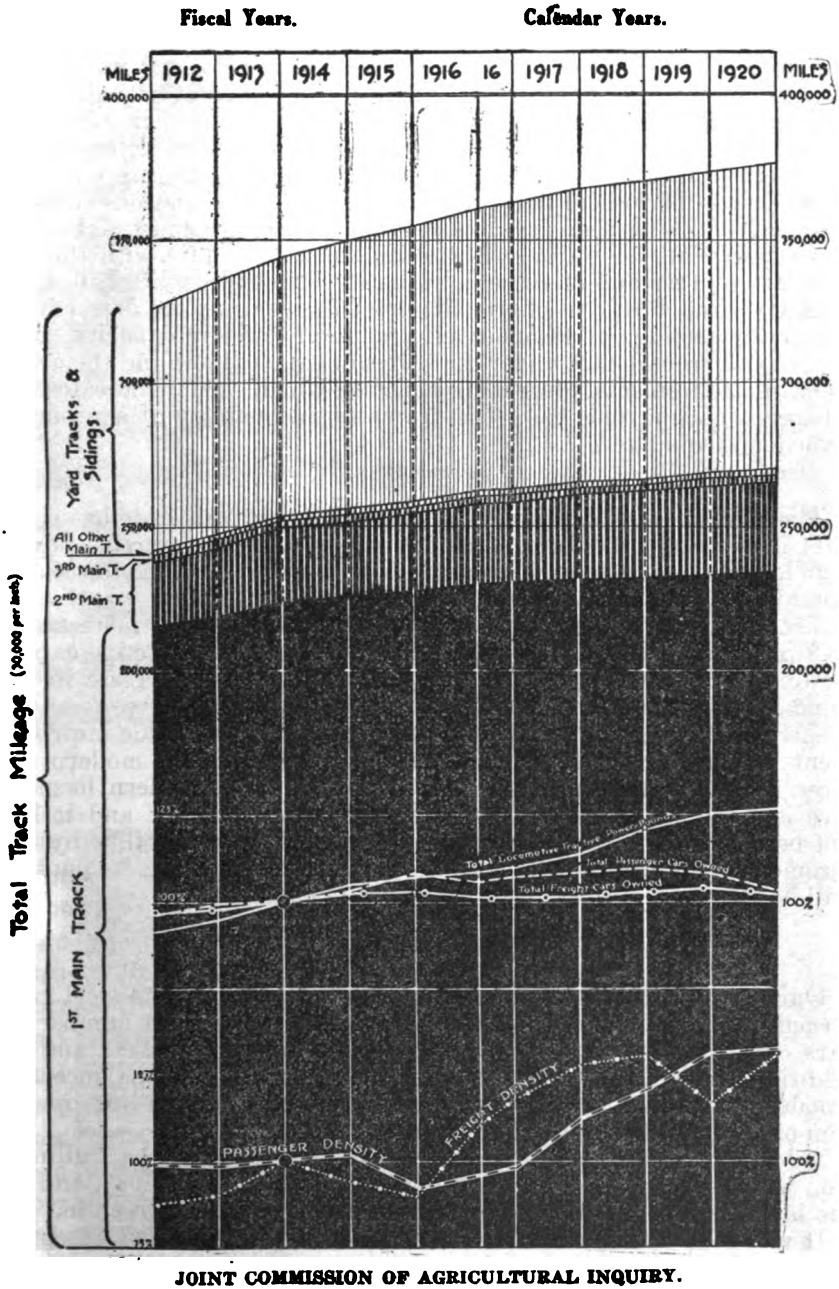
	Calendar years ended Dec. 31—					
	1916	1917	1918	1919	1920	1921
Revenue tons transported (including tons from connections):						
Products of agriculture	232,826,641	217,284,954	228,322,331	229,039,755	220,049,724	.....
Animals and products	52,460,868	55,252,681	61,404,525	62,024,319	44,853,401	.....
Products of mines	1,153,945,274	1,215,324,890	1,263,502,734	1,041,605,697	1,209,097,673	.....
Products of forests	188,173,187	203,366,179	192,616,711	187,446,191	195,579,878	.....
Manufactures and miscellaneous	456,169,588	486,936,993	463,011,395	430,336,689	494,556,178	.....
Merchandise—all less than carload freight	93,671,523	91,869,356	98,368,439	93,939,796	89,901,495	.....
Tons unassigned as to commodity	2,448,962	.....	.....	338,034	5,944,927	.....
Total revenue tons transported	2,179,696,043	2,270,035,053	[3] 2,307,226,135	[4] 2,044,730,481	2,259,983,275	.....
Nonrevenue tons carried (company freight)	246,861,895	248,097,379	235,028,890	211,331,921	238,148,987	.....
Per cent of annual increase	1.0	.50	[2] 5.3	[2] 10.1	12.7	.....
Per cent increase over 1911	24.2	24.2	17.6	5.8	19.2	.....
Revenue ton-miles	362,444,397,129	394,465,400,493	405,379,284,206	364,293,063,017	410,306,206,802	306,755,000,000
Per cent of annual increase	6.6	8.8	2.8	[2] 10.1	12.6	[2] 25.2
Per cent increase over 1911	45.1	57.9	62.3	45.8	64.2	22.7
Nonrevenue ton-miles	33,921,519,953	35,853,614,142	34,622,429,459	31,385,988,712	36,971,920,087	37,588,000,000
Per cent of annual increase	.81	5.7	[2] 3.4	[2] 9.4	[2] 1.3	1.6
Per cent increase over 1911	33.2	40.8	36.0	23.3	45.2	47.6
Total net ton-miles	396,365,917,082	430,319,014,635	440,001,713,665	395,679,051,729	447,278,126,889	344,343,000,000
Revenue passengers carried	1,005,954,777	1,066,638,474	1,084,997,896	1,177,820,454	1,234,762,048	.....
Per cent annual increase	10.4	6.0	1.7	8.6	4.8	.....
Per cent increase over 1911	10.7	11.4	11.6	12.5	13.2	.....
Revenue passenger-miles	34,585,952,026	39,476,858,549	42,676,579,199	46,358,308,740	46,848,667,987	.....
Per cent annual increase	2.8	8.1	8.1	8.6	5.4	.....
Per cent increase over 1911	6.8	21.9	31.8	43.2	50.9	.....
Revenue ton-miles per mile of road (freight density)	1,569,084	1,698,825	1,738,305	1,558,081	1,748,451	1,313,928
Revenue passenger-miles per mile of road (passenger density)	149,795	170,088	183,066	198,345	199,638	.....
Average haul:						
Revenue ton	282.99	292.57	301.47	313.29	324.9	326.2
Nonrevenue ton	137.41	144.51	147.31	118.51	130.05	.....

[1] Computed by the Bureau of Railway Economics.
[2] Decrease.
[3] Includes 1,401,195 tons carried by the Southern Pacific steamship lines for which no ton-miles or freight revenue is reported.
[4] Includes 1,500,706 tons carried by the Southern Pacific steamship lines for which no ton-miles or freight revenue is reported.

Digitized by Google

Chart B 5.

FACILITIES, STEAM RAILROADS—TRACK MILEAGE (ACTUAL FIGURES)—EQUIPMENT (1913, 100 PER CENT)—TRAFFIC DENSITY (1913, 100 PER CENT)—CLASS I RAILROADS (EXCLUDING SWITCHING AND TERMINAL COMPANIES).



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

The use made of the track facilities of the country is reflected to some extent in figures given in Table No. B8 and chart No. B5. The revenue ton-miles per mile of road, termed the freight density, increased from 1,116,164 in 1911 to 1,748,451 in 1920, or 50.6 per cent. The figures for 1920 were the highest ever reached. The only approach to this record was 1,738,305 in 1918. Revenue passenger-miles per mile of road, or passenger density, increased from 151,123 in 1911, to 199,638 in 1920, the figures for 1920 being in excess of any previous record. After making due allowance for the situation in 1918 and 1920 it will be seen that the increase each year is in considerable volume, and it is only reasonable to expect that this increase will continue despite periodical fluctuations occasioned by variations in business activity. It is therefore evident that the carriers must make adequate provision for increase in trackage commensurate with the expectancy of a normal increase in business. Tables Nos. B9, B10, B11, B12, B13, and B14, and charts B6 and B7 give complete data covering the ownership of locomotives, and their tractive capacity, passenger and freight cars under the several classifications and the additions and retirements, presenting a picture which clearly indicates the advances, and in some cases the decreases, in quantity of equipment owned and operated.

LOCOMOTIVES.

The total number of locomotives owned by the railroads has since 1911 increased by 6,661, or 11.4 per cent; the average tractive power per locomotive increased from 28,305 pounds in 1911 to 36,313 pounds in 1920; the aggregate tractive capacity in 1911 was 1,624,933,414 pounds, and in 1920, 2,337,312,896 pounds, an increase of 43.8 per cent. This indicates that the increase in the tractive capacity of locomotives has been in greater ratio than the increase in the number of locomotives. Not only have new locomotives been of greater tractive capacity, but railroads generally have made improvements upon their older locomotives by the addition of modern devices, greatly increasing their tractive effort. The modern locomotive is a tribute to the skill of the American mechanic, and it has not been equaled either as to power or general serviceability by the locomotive of foreign countries. The use made of the locomotive will be discussed further in an appropriate manner.

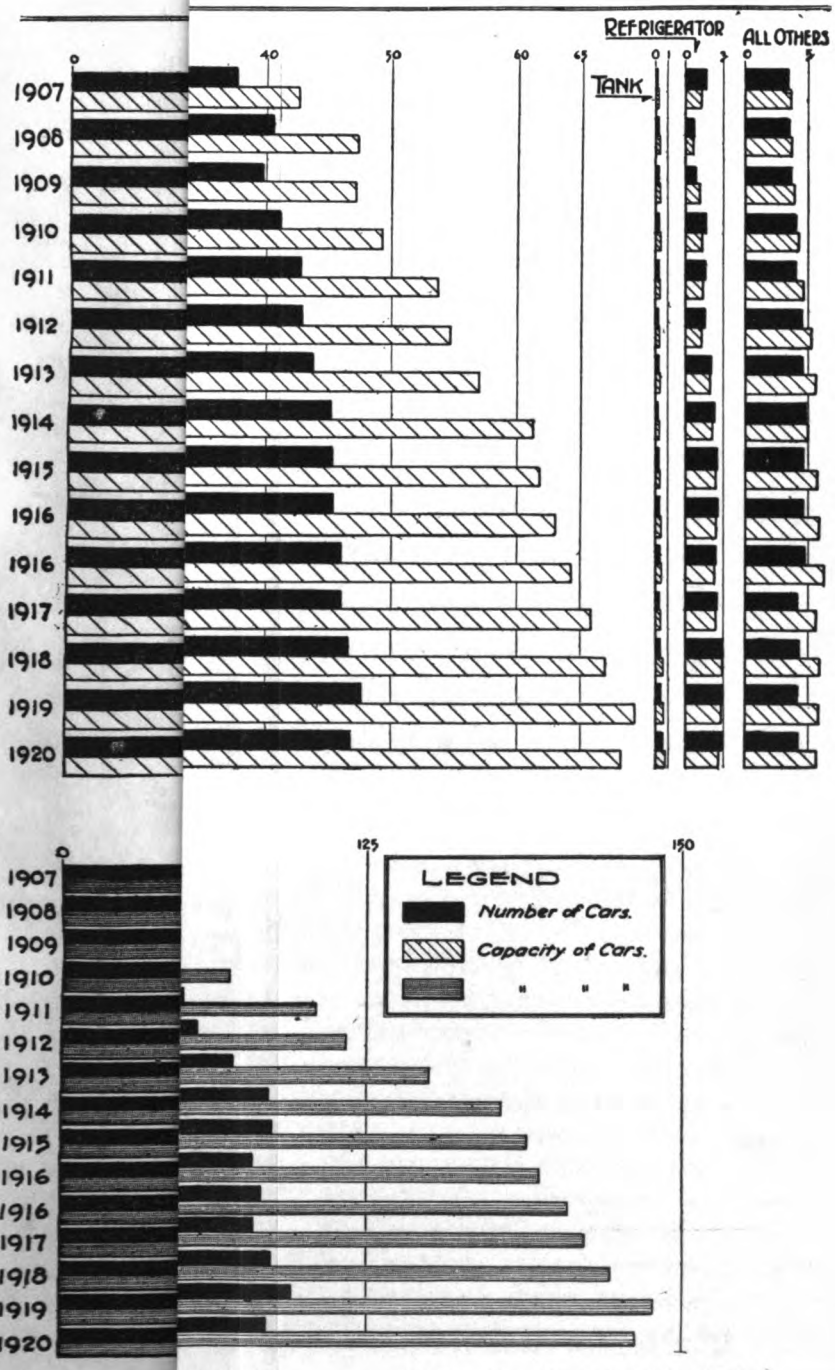
PASSENGER CARS.

Our most modern passenger-train cars are of complete steel construction or are cars with steel underframes. The total number of cars of all-steel construction is now approximately 15,000, and in addition there are 6,400 with steel underframes. The balance are wooden cars, used principally in suburban and branch-line operation or in the lighter main-line trains.

Table No. B15 gives the passenger-car ownership of the Pullman Co., which has increased from 5,186 in 1911 to 7,826 in 1921, and of the latter number 6,091, or 77 per cent, are of steel construction.

It will thus be seen that the development of the steel car has been comparatively rapid and, as is well known, the steel car contributes greatly to the safety of the traveling public. The modern passenger car, besides being of steel construction, is larger, affords more comfort-

Digitized by Google



Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

able accommodations to passengers, is much heavier, requiring heavier track, heavier locomotives, and costs the railroad owners more money. A comparison of the size, seating capacity, weight, and cost of the average passenger coach of to-day and one of the older wooden cars is as follows:

PASSENGER COACHES OF TO-DAY AND 20 YEARS AGO.

Then.—Length, (1) 53 feet 8 inches; (2) 48 feet 6 inches; (3) 60 feet. Capacity, (1) 64 persons; (2) 56 persons; (3) 67 persons.
Construction: All wood 4-wheel trucks; Nos. 1 and 2, open platform; No. 3, vestibule. No. 3 also has smoking compartment; small windows, about 25½ by 29 inches, except No. 3, which shows more modern type of window.
Lighting: Oil lamps; some first-class coaches (like No. 3) had Pintsch light.
Heating: Coal (or wood burning) heater at end of each car. Steam and hot-water systems coming into use; in older equipment stoves.
Weight: (1) 65,000 pounds; (2) 53,300 pounds; (3) 70,600 pounds.
Now.—Length, (1) 70 feet; (2) 78 feet 10½ inches; (3) 72 feet 4 inches. Capacity, (1) 76 persons; (2) 88 persons; (3) 78 persons.
Construction: All steel; No. 1 has six-wheel trucks; Nos. 2 and 3, four-wheel trucks; closed vestibules; size of windows about same.
Lighting: Electric.
Heating: Steam.
Weight: (1) 144,000 pounds; (2) 120,000 pounds; (3) 115,500 pounds.

The average cost of a passenger coach in 1910 was $8,500, and in 1922, $15,500.

There is no general indication that the carriers are deficient in the ownership of suitable passenger equipment. Additions have been made from time to time as appeared necessary, and in no other branch of the service have the facilities of the carriers more fully met the need.

FREIGHT CARS.

Table B11 and chart B6 indicate the number of freight cars in service by classes in the years 1900 to 1921, inclusive, and 1907 to 1920, respectively. Table B12 shows the aggregate capacity of the several classes and the capacity of each class from 1902 to 1920, inclusive; also the per cent, the number, and capacity which each class bears to the total number and capacity and the percentage of increase in number and capacity. The ownership of all cars is shown for the years 1870, 1880, and 1890.

The railroad ownership of all freight-car equipment totaled 2,342,160 cars in 1921, this being an increase of 55.5 per cent over 1902. The aggregate weight-carrying capacity of the ownership during the year 1920, which was 2,321,517 cars, was 98,020,264 tons, or an increase of 131.8 per cent over the aggregate carrying capacity of 1902.

BOX CARS.

The box car is the type most generally in use and most nearly approaches a general-purpose car. The number owned and operated by the railroads shows an increase of 47.9 per cent in 1920 over 1902. The aggregate capacity of this type of car increased during the same period 105.3 per cent. The present ownership of box cars is 1,048,762, or 45 per cent of the total ownership of all types. The aggregate capacity of the box cars is 39.9 per cent of the aggregate capacity of all cars.

Digitized by Google

FLAT CARS.

The flat car is used for various rough commodities, such as lumber, steel, pipe, heavy stone, heavy machinery, and similar commodities. The total number of this type of car now in service is 104,983, a decrease of 26.2 per cent since 1902. The aggregate capacity of all flat cars has increased during the same period 11.1 per cent. During the early years of railroad operation, especially the years of heavy new construction, the flat car found favor with railroad managements and was used to a large extent for construction purposes. Various new types of equipment have supplanted it, and it is not now generally used for construction or maintenance work.

STOCK CARS.

The stock car is used primarily for the transportation of live stock, although during periods of the year when live stock is not being offered for transportation in large quantity stock cars are used for various classes of rough freight. In number this type has increased 40 per cent over the year 1902, and in capacity 92.6 per cent. There are two classes of stock car—the single deck, used for cattle, horses, and hogs, and the double deck, used for the smaller animals, such as sheep and hogs. The double-deck car is not suitable for anything but stock. Certain lines of railroad, however, have adopted a type of stock car which may be readily converted into either a double-deck or a single-deck car. The number of such cars now owned and operated, however, is not indicated.

COAL CARS.

Under this classification are included all open-top cars except flat cars. There are various types of coal cars, those constructed primarily for coal loading being equipped with high sides and with automatic dumping devices. Then there are open-top cars with fixed sides and ends and without the dumping device. When such cars are used for coal they are usually unloaded by hand. There are also a number of cars built for the transportation of steel, with low sides and of heavy carrying capacity. Some of these may be used for coal, but because of the low sides can not carry an amount commensurate with the weight-carrying capacity. In addition to coal, coke, and steel, open-top cars are used for the transportation of stone, sand, gravel, road-building material of various sorts, lumber, and other rough commodities. In number the open-top cars show an increase in 1920 of 74.5 per cent over 1902; in aggregate carrying capacity an increase of 178.7 per cent. The increase in carrying capacity is especially noticeable in those types used for ore, coal, and steel, some having a carrying capacity of 100 tons. The average carrying capacity of all cars of this type in 1911 was 42.1 tons, and in 1920, 49.1 tons.

TANK CARS.

The tank car is used for transporting oil, or other liquids transported in bulk. The number of this type of car owned by the railroads in 1920 was 10,380, an increase of 193.8 per cent over 1902.

Digitized by Google

These cars are used chiefly for transporting fuel and lubricating oil for the railroads, the general commercial movement of oils being transported in privately owned tank cars, which will be discussed later.

REFRIGERATOR CARS.

The refrigerator car is used for the transportation of perishable foodstuffs, meats, game, poultry, dairy products, green fruits, and vegetables, and fresh fish. The number of refrigerator cars owned by the railroads in 1921 was 62,614, an increase of 44,392 since 1902. The increase in the aggregate carrying capacity during the same period was 301.5 per cent.

MISCELLANEOUS CARS.

In addition to the types of cars covered, the railroads own cars of miscellaneous types used for various purposes which have increased in number 104.9 per cent since 1902 and in the aggregate carrying capacity 247.6 per cent.

FREIGHT CARS PRIVATELY OWNED.

In addition to the cars owned and operated by the railroads, there are a number of cars owned by private corporations, largely by industries interested in the movement of particular commodities. The number of privately owned cars in the United States at present under the several classifications is as follows:

Box cars	766
Stock cars	3,878
Coal cars	28,615
Flat cars	1,410
Tank cars	132,465
Refrigerator cars	56,124
All other cars	2,466
Total	225,724

Most of these cars are of modern construction and suitable for transportation of various products in any of the railroad freight trains, the same standard of construction and maintenance being followed as in the case of railroad-owned equipment.

The several private corporations in the meat-packing industry own a considerable number of refrigerator cars. The supply of such cars is designed to meet the necessities of this particular industry, and it is assumed that the owners will augment their supply from time to time as necessity arises. It should not be understood, however, that the private car lines supply all of the equipment for meat and its products. The railroads supply a proportion of such equipment, especially to the smaller packing establishments. Included in the list of private car lines are three companies engaged in the transportation of highly perishable commodities, such as fruits and vegetables. These are the American Refrigerator Transit Co., controlled by several railroads of the Southwest; the Pacific Fruit Express Co., owned by the Union Pacific and Southern Pacific systems; and the Fruit Growers Express, owned by seven or eight of the eastern

Digitized by Google

railroads, such as the Atlantic Coast Line, Seaboard Air Line, Louisville & Nashville, Southern Railway system, Baltimore & Ohio, Pennsylvania system, and others. These three private car lines serve territories entirely distinct, except that the Pacific Fruit Express competes with the Santa Fe Railroad for traffic originating in California. The Fruit Growers Express, under its present management, was organized in 1920 and took over the Fruit Growers Express cars, theretofore controlled by Armour & Co. This private line serves the Southeastern States and usually contracts to supply cars to some extent in the State of Michigan. The American Refrigerator Transit Co. supplies cars along the lines of its owners in Missouri, Arkansas, Oklahoma, and Texas, and along the lines of the Denver & Rio Grande Western in Colorado and other Western States. The Pacific Fruit Express serves shippers on its own lines.

A large measure of success has attended the handling of refrigerator cars by these private-line companies. The extension of their activities would prove beneficial to the shipping public and the carriers as well. With the rapid increase in the production of perishables, such as fruits and vegetables, and the nation-wide distribution now made of such commodities it is difficult for the individual railroad lines to purchase and own the large number of refrigerator cars required to serve the particular producing districts for which they are responsible without a great outlay of money for equipment which can be used only a portion of the year. It should be understood, however, that the carriers are responsible and must supply sufficient refrigerator cars to fully meet the demands in the territory which they serve. Not only the present needs must be promptly met but adequate provision must be made to protect all future requirements. The solution of this problem is the extension of the ownership and control of the private-line companies, so that the total number of refrigerator cars may be made available for all districts of the country as the need arises.

Table A22 on page 24 shows the relative shipments of green fruits and vegetables from the several producing districts and indicates the month of the peak movement. The conclusion can be safely drawn that a less number of refrigerator cars will be required if the same cars are utilized along the lines of seasonal production and shipment.

Among the privately owned cars are 132,465 tank cars used in the transportation of liquids such as petroleum and its refined products, vegetable oil, molasses, and fish oils. The increase in the number of such cars has been rapid during the past few years, due to the development in the petroleum and vegetable-oil industry induced largely by the war.

There are 28,615 privately owned coal cars. These are owned by coal-mine operators and serve to augment the general supply.

The railroads pay mileage rates to the owners of private-line cars—refrigerator and stock—for all movements, loaded and empty, the rates for refrigerator cars being 2 cents per mile and stock cars 1 cent. Approximately 50 per cent of all mileage for these two classes of equipment is empty, and hence represents a transportation expense for which the railroad is not compensated.

Digitized by Google

ADEQUACY.

The adequacy of the present railroad freight-car equipment is dependent to a large extent upon the efficiency with which cars are handled with respect to their proper maintenance, distribution, and movement. The question of car distribution will be discussed later. It is the desire at this point to consider the increase in the number and capacity of cars available during the past several years in its relation to the amount of tonnage transported.

The number of cars owned and operated by the railroads has increased 6.7 per cent over 1911. The aggregate capacity has increased 18.2 per cent. The net ton-mileage for 1920 shows an increase of 62.4 per cent over 1911. The traffic handled during 1920 was greater than in any previous year. It appears fair to assume that the increase in car supply must be based upon the increase in the volume of traffic offered, with due consideration for efficiency of handling. The necessity for a greater number of freight cars during periods of maximum movement is in part the result of light loading bad-order cars and slow movement on congested railroads or in terminals. The purchase of the necessary new freight-car equipment by the railroads depends upon their financial condition. There appears to be in this question a much more important principle; and while it is desirable to prevent any unnecessary outlay of money, we have here a situation of vital interest, not only to the investor in railroad securities but in a much larger degree to the shipping public, and, in fact, to our entire economic structure. Carriers feel that the supply of cars should be adjusted fairly and equitably as between supply and demand. In other words, it is felt by the railroads that they can not be expected to meet a short peak demand. They take the position that they must guard against the acquirement of cars to serve only during short peak periods and which must necessarily lie idle at all other times, thus creating an economic waste.

The commission feels that transportation should be made an incident to trade and should not restrict commerce. If the carriers do not supply sufficient equipment to reasonably meet the demands, an artificial situation economically unsound is created. Failure to supply cars in adequate numbers during any considerable period usually results in an inflation of prices. During times of general business activity as well as at other times there are a large number of individuals throughout the country striving to make a living through the purchase and sale of goods, each transaction dependent upon transportation by railroad. It does not seem right or proper to deny them the opportunity which should be extended to every shipper. The commission is of the opinion that a sufficient number of cars should be added to the supply to meet the demand for cars wherever ordered and in whatever quantity they may be required.

The major trend of freight traffic is from west to east, and it is largely moved in box-car equipment. The return movement of empty box cars from the East to the West must be made in heavy volume to meet the needs of originating territory. The supply of box cars is insufficient to meet the peak demands, and it should be augmented by additional cars.

Digitized by Google

The supply of stock cars does not fully meet the requirements of the peak demand, which in the case of stock is especially urgent. The number available should be augmented by new construction.

The present number of coal cars is insufficient to meet the peak demands of the basic industry requiring such equipment, and should be augmented by new construction.

The present supply of refrigerator cars is insufficient to meet the peak demands for perishable loading and should be rapidly augmented by new construction.

STANDARDIZATION OF FREIGHT-CAR EQUIPMENT.

The desire of railroad managers to increase train loading and thus decrease the number of trains has resulted, among other things, in an increase of the carrying capacity of freight cars. This increase in carrying capacity was particularly heavy between the years 1902 and 1913, during which period the earlier types of cars of 20 tons and less capacity were being retired from service, and either destroyed or disposed of to the short line and industrial railroads.

New construction at first included cars 34 feet and longer with capacities of 25 tons and greater, with a maximum length of 50 feet and maximum capacity of 40 tons, although comparatively few of the longer cars were built, the length generally being fixed at 36 and 40 feet. Later the length of cars was generally restricted to 40 feet, but the weight-carrying capacity was increased to 40, 50, 75, and 100 tons. At present closed-car equipment ranges from 36 to 40 feet in length, with a weight-carrying capacity of from 30 to 50 tons. Open cars, which include all coal, ore, and steel carrying equipment, are generally 40 feet in length, carrying from 40 to 100 tons. There is no great demand on the part of the shipper for the standardization of box cars. In fact, many prefer a wide range of selection to meet the requirements of trade. In some lines, such as the automobile industry, special types are required, and there are many shades of opinion, both on the part of the automobile shipper and the railroads, as to the exact type best suited to the industry and acceptable to the carriers. The adoption of highly specialized types is undesirable and adds greatly to the expense of the carriers by increasing the empty car mileage and switching expense.

In the early days of railroading, cars were confined almost, if not entirely, to movement on the railroads for which they were built and to which they belonged. As the country developed, and distribution became national instead of local, the inconvenience of transshipping freight when carried long distances brought about the adoption of a standard track gauge and the movement of cars over more than one railroad; and as the demand for carrying freight to greater distances without breaking bulk increased, improvement in the standardization of cars was necessary in order to carry the commodity to its destination without transfer and consequent delay en route. The lack of standard freight cars was primarily responsible for the establishment of the different express or fast through freight lines which operated over two or more roads in different sections of the country.

Difficulties constantly occurred in regard to the repair of cars. When cars were away from their home lines delay in repair was

Digitized by Google

experienced, as the line having the car would either not have the right materials or the right kind of parts for replacement. The result was the establishment of what is now known as the Master Car Builders' Association, formally organized at Altoona, Pa., September 18, 1867. Forty-one master car builders were present, and a constitution and by-laws were adopted. The objects of the association were the advancement of knowledge concerning the construction, maintenance, and service of railroad cars, and parts thereof, and to provide an organization through which the members and the companies they represented could agree upon joint action to bring about uniformity and interchangeability in the parts of railroad cars, and to improve their construction. Several subdivisions of this association have since been established and are now functioning.

Illustrating the evolution in standardization of freight-car parts, the following comparison of a few representative car parts, necessary to keep on hand at railroad shops for repairs, is given as of 1882 and 1921:

	1882	1921
Axles, different kinds	56	5
Journal boxes, different kinds	58	5
Couplers, different kinds	26	1
Brake shoes, different kinds	20	1
Brake heads, different kinds	27	1

A standard car axle was first recommended and adopted in 1873. To-day there are about five standard sizes of axles in use, with provision for a sixth standard size to be used in the construction of cars heavier than existing types.

Continued experiments and standardization of the following parts are also representative of the progress which has been made in this direction since 1865:

Wheels, axle journal boxes, truck bolsters, arch bars, cast steel side frames, center plates, couplers, draft arrangements, brakes and brake equipment, air brake coupling hose, brake beams, brake heads, brake shoes, foundation brake rigging, car bodies, safety appliances, lettering and marking of freight cars, tank cars, bolts and nuts, brake chains, door fixtures, door operating shafts, springs, pipe unions, screw threads, and safety chains.

Safety appliances for freight cars were first adopted by the railroads in 1883. These safety appliances were advanced to standard in 1902, and in 1911 were made mandatory by the interstate commerce act. Jurisdiction over this feature of the equipment of freight cars is now embodied in that act and is being exercised by the Interstate Commerce Commission.

Although an advance has been made in the standardization of freight car equipment, there is room for still greater improvement. Types of freight cars have been developed ostensibly to serve the shipper along a particular railroad to better advantage, but which in reality represent the personal views of some executive, and in most cases cost more money. The eastern lines generally have adopted the 36-foot box car as standard while the standard of the western lines is a 40-foot car. When it is understood that a very great

Digitized by Google

proportion of the loading must be moved in cars foreign to the originating line, the folly of such a course will be appreciated.

OTHER OPERATING PROPERTY.

In addition to tracks and equipment, the railroads own and maintain much property necessary to the operation of the railroad. This includes office buildings, freight and passenger stations, coal docks, coal chutes and elevating devices, oil tanks and pipe lines, water tanks, pipe lines and pumping plants, roundhouses, storerooms, car and locomotive shops, electric and other signal devices, shanties for watchmen and switchmen, yard offices, section houses and tool houses, stockyards, pens, and loading chutes, complete telephone and telegraph systems, power stations and substations, grain elevators, warehouses, coal and ore docks, and wharves at tide, lake, and river terminals.

Tables B16 and B17 indicate the railroad facilities available at 14 of the principal Atlantic, Gulf, and Pacific ports, the railroad, municipal, and private facilities for handling coal in quantity at tidewater ports and ports on the Great Lakes, and the railroad and private facilities for handling iron ore at ports on the Great Lakes.

Digitized by Google

TABLE B16.—*Statement showing facilities for handling import, export, and coastwise general cargo freight at tidewater ports.*

[Data secured by American Railway Association.]

Cities.	Track capacity for cars.	Covered storage pier capacity.		Uncovered or ground storage capacity.		Grain elevators.	Grain elevator capacity in carloads (1,400 bushels per car).		Rate of discharge of grain in bushels per hour.	
		Carloads.	Tons.	Carloads.	Tons.		Storage.	Working.	Cars to elevators.	Elevator to vessels.
Portland, Me	1,700	600	18,000	125	5,000	2	1,637	1,429	19,600	45,000
Boston, Mass	3,415	3,250	125,000	533	21,320	3	1,786	1,339	32,000	39,000
New York, N. Y	13,290	6,075	201,450	16,895	635,800	7	4,428	2,986	.....	.....
Philadelphia, Pa	1,182	1,865	51,625	2,150	105,500	2	3,143	2,657	30,100	86,800
Baltimore, Md	4,704	3,251	125,440	30,300	1,245,000	4	5,428	4,678	45,500	117,880
Norfolk, Va	6,572	5,955	179,400	[1] 14,150	[1] 437,000	1	82	82	.....	.....
Newport News, Va	4,500	1,060	42,400	300	12,000	1	778	778	14,000	22,680
Mobile, Ala	3,285	2,230	79,245	2,164	85,740	1	147	142	4,500	15,000
New Orleans, La	10,876	19,667	534,984	1,953	63,340	5	4,625	4,156	66,080	187,600
Galveston, Tex	7,446	5,183	97,937	[2] 438	[2] 17,500	4	2,643	2,113	33,600	93,800
Port Arthur, Tex	363	1,100	38,600	1,332	46,600	1	357	322	10,000	60,000
San Francisco, Calif	2,875	12,385	495,750	6,000	242,000	.....	.....	.....	.....	.....
Tacoma, Wash	3,300	3,377	118,800	6,000	240,000	8	3,725	3,700	22,600	54,800
Seattle, Wash	4,366	18,166	545,864	9,257	354,233	5	1,785	1,700	.....	.....
Total	67,874	84,164	2,654,495	91,597	3,511,033	44	30,564	26,082	277,980	722,560

[1] Exclusive of facilities owned by Atlantic Coast Line R. R. reported as unlimited.
[2] Exclusive of facilities owned by Southern Pacific and Galveston, Harrisburg & San Antonio railroads reported as unlimited.

70678—H. Rept. 408, 67-1, pt 3——17

Digitized by Google

TABLE B17.—*Statement showing coal and ore pier facilities at principal tidewater and lake ports.*

[Data compiled by American Railway Association and Chief of Engineers United States Army.]

RAILROAD.

Port.	Number of piers.	Unloading capacity per hour.	Total storage capacity ground and pocket.	Car storage on the premises and in yards.
COAL.				
Tidewater:		*Tons.*	*Tons.*	*Cars.*
Portland, Me.	6	1,280	49,000	1,70
Boston, Mass.	2	1,250	102,420	60
New York, N. Y.	17	13,670	279,560	12,26
Philadelphia, Pa.	2	2,910	220,200	5,07
Baltimore, Md.	4	13,550	42,300	5,97
Norfolk, Va.	2	4,060	412,459	8,76
Newport News, Va.	1	5,000	.....	3,35
Charleston, S. C.	2	1,700	15,000	40
Mobile, Ala.	1	300	.....	23
New Orleans, La.	1	250	.....	11
Tacoma, Wash.	1	2,000	16,100	25
Total	39	48,010	1,137,069	38,83
Lake:				
Duluth, Minn.	1	1,000	600,000	.....
Superior, Wis.	2	500	245,000	.....
Cleveland, Ohio.	4	2,100	.....	2,81
Buffalo, N. Y.	2	2,000	177,000	3,22
Toledo, Ohio.	3	6,900	.....	3,00
Ashtabula, Ohio.	1	2,000	.....	1,94
Lorain, Ohio.	1	1,850	.....	1,89
Total	14	16,350	1,022,000	12,73
ORE.				
Lake:				
Agate Bay, Minn.	4	5,100	186,600	2,38
Duluth, Minn.	3	6,000	345,600	4,00
Superior, Wis.	6	8,249	573,140	7,86
Ashland, Wis.	4	4,950	252,800	3,81
Marquette, Mich.	1	675	45,000	63
Toledo, Ohio.	2	1,500	475,000	68
Lorain, Ohio.	1	800	400,000	30
Cleveland, Ohio.	2	3,625	2,200,600	2,12
Ashtabula, Ohio.	1	6,000	2,250,000	84
Erie, Pa.	2	750	410,000	67
Buffalo, N. Y.	5	3,150	631,000	77
Total	31	40,799	7,769,740	23,97

PRIVATE.

COAL.				
Tidewater:				
Portland, Me.	7	1,360	60,720	.....
Boston, Mass.	14	6,145	569,166	.....
Philadelphia, Pa.	3	270	211,610	40
New York, N. Y.[1]	211	13,754	2,454,998	875
Baltimore, Md.	8	65	7,800	.....
Wilmington, N. C.	1	50	15,000	10
Charleston, S. C.	2	1,200	332,080	130
Savannah, Ga.	1	100	13,500	13
Jacksonville, Fla.	2	120	33,360	15
Mobile, Ala.	3	.....	6,400	.....
New Orleans, La.	4	295	22,215	30
Galveston, Tex.	2	130	30,000	.....
San Diego, Calif.	1	100	15,000	80
San Francisco, Calif.	1	800	191,000	70
Portland, Oreg.	2	375	14,830	27
Tacoma, Wash.	1	50	8,200	.....
Seattle, Wash.	2	615	49,600	150
Total	265	25,429	4,035,489	1,140

[1] Includes municipal.

Digitized by Google

TABLE B17.—*Statement showing coal and ore pier facilities at principal tidewater and lake ports*—Continued.

RAILROAD.

Port.	Number of piers.	Unloading capacity per hour	Total storage capacity, ground and pocket.	Car storage on the premises and in yards.
		Tons.	*Tons.*	*Cars.*
Lake:				
Duluth, Minn.	7	4,860	4,175,000	.....
Superior, Wis.	11	4,300	3,810,000	.....
Milwaukee, Wis.	18	6,020	3,385,000	.....
Green Bay, Wis.	8	1,675	980,500	.....
Detroit, Mich.	2	.....	.....	.....
Buffalo, N. Y.	1	.....	.....	.....
Toledo, Ohio.	1	480	.....	.....
Huron, Ohio.	1	1,500	.....	.....
Sandusky, Ohio.	1	2,000	.....	.....
Ashtabula, Ohio.	3	4,000	.....	.....
Total.	53	24,835	12,350,500	.....
ORE.				
Lake:				
Milwaukee, Wis.	2	600	190,000	.....
Detroit, Mich.	1	.....	.....	.....
Huron, Ohio.	1	2,000	.....	.....
Lorain, Ohio.	1	1,100	.....	.....
Cleveland, Ohio.	3	3,650	.....	.....
Buffalo, N. Y.	4	2,880	.....	.....
Tonawanda, N. Y.	2	.....	.....	.....
Total.	14	10,230	190,000	.....

RECAPITULATION.

	Number of piers.	Unloading capacity per hour.	Total storage capacity, ground and pocket.	Car storage on the premises and in yards.
COAL.				
Tidewater:		*Tons.*	*Tons.*	*Cars.*
Railroad	39	46,010	1,137,069	38,835
Private	265	25,429	4,035,489	1,140
Total	304	71,439	5,172,558	39,975
Lake:				
Railroad	14	16,350	1,022,000	12,730
Private	53	24,835	12,350,500	.....
Total	67	41,185	13,372,500	12,730
Total coal	160	98,870	16,090,060	52,130
ORE.				
Lake:				
Railroad	31	40,799	7,769,740	23,976
Private	14	10,230	190,000	.....
Total	45	51,029	7,959,740	23,976

TIDEWATER PORTS.

At various times during the war period and subsequent thereto the port facilities have been taxed to the utmost to handle the volume of export, import, and coastwise traffic seeking movement through tidewater ports. Were all port facilities utilized to maximum capacity, the congestion, even during periods of greatest transportation activ-

Digitized by Google

ity, would be considerably reduced. The volume of traffic moving through certain ports is frequently greater than can be expeditiously handled, while at the same time the facilities of other ports are not being fully utilized. During the war and continuing during 1920 the railroad administration and the individual railroads endeavored to regulate the flow of traffic through certain ports by requiring shippers to secure a permit for each individual shipment. These permits were issued by a port committee established for the purpose, which required shippers to present satisfactory evidence that space on a vessel to sail on a specific date was under contract. This method, while unsatisfactory in many respects, prevented an excessive accumulation of freight in cars awaiting delivery to vessel and the resultant railroad congestion, and facilitated the movement through the port. In order to avoid delay to the vessel a part of the cargo must be available at the port in advance of the ship's arrival, the balance to arrive in time to enable the ship to complete loading before the scheduled sailing date. When many vessels are scheduled, the amount of tonnage at the port reaches a considerable volume.

The measure of the port facilities is the ability to assemble and handle the advance portion of the cargo for all scheduled sailings without congestion of railroad facilities. A portion of the cargo may be unloaded from cars and placed in covered piers or wharves. To avoid the expense of rehandling, heavy articles are permitted to stand on cars and are loaded direct to vessel or lighter. Ground storage in most cases is used only to avoid congestion of tracks and delay to freight equipment. The volume of grain which may be handled is controlled by the ability of the elevators to receive and deliver to vessels and the number of vessels available. Railroads generally have provided track room at the ports to care for a considerable number of cars of freight awaiting discharge to piers, elevators, and vessels. In some cases there is insufficient track room to handle a normal movement through the port, and in such cases additional tracks should be provided. Generally, however, the need is not for more tracks but more piers, wharves, warehouses, and elevators, so that the freight cars may be promptly released. While it is recognized that cars loaded with freight for vessels can not always be promptly released, at the same time delay to freight equipment should be avoided.

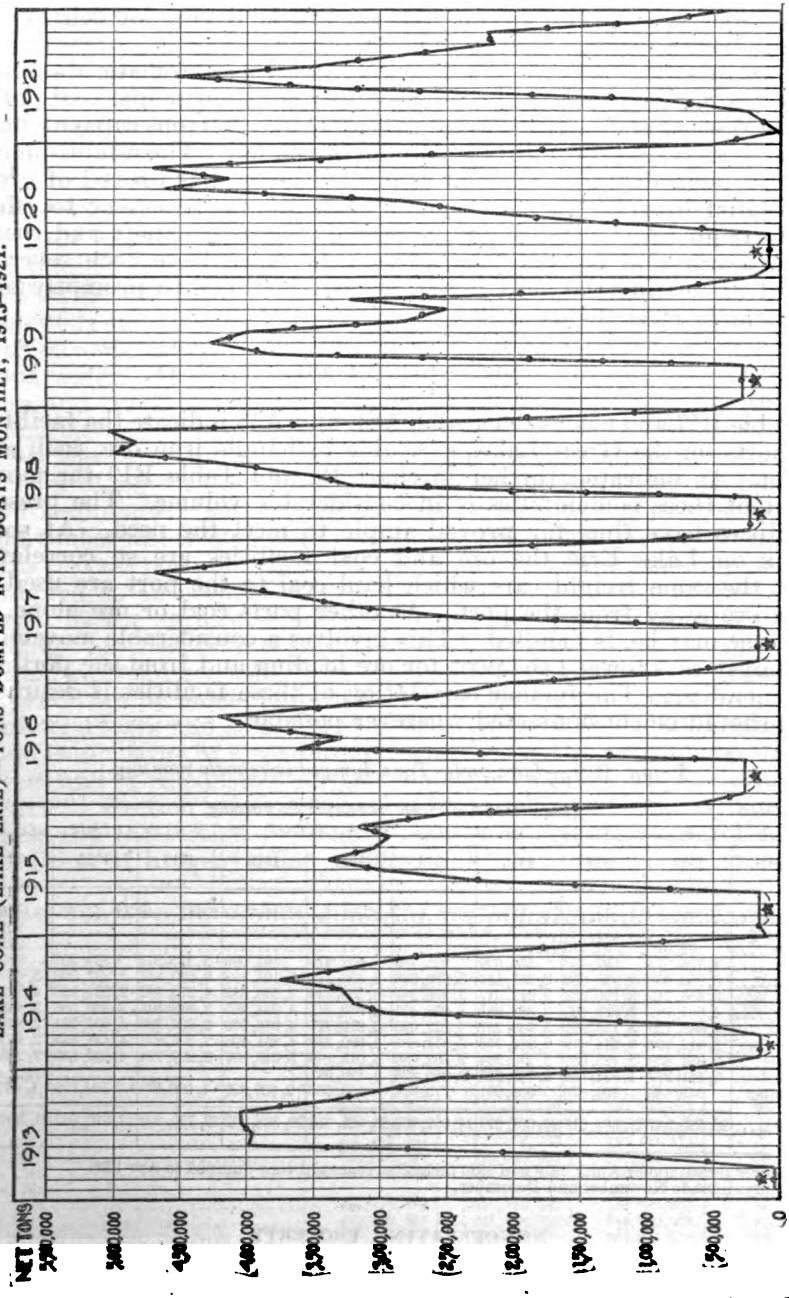
TABLE B18.—*Eastern tidewater bituminous coal shipments for four years, in net tons.*

	1918	1919	1920	1921
Ports:				
New York	17,091,000	14,234,000	14,825,000	11,912,000
Philadelphia	3,121,000	4,411,000	6,191,000	3,641,000
Baltimore	3,641,000	3,467,000	7,831,000	4,136,000
Hampton Roads	18,977,000	14,630,000	24,026,000	17,242,000
Charleston	79,000	320,000	911,000	392,000
All ports	42,909,000	37,062,000	53,784,000	37,323,000
Destination:				
Coastwise to New England	15,248,000	8,386,000	10,457,000	8,859,000
Exports	3,741,000	8,292,000	21,778,000	9,653,000
Bunker	6,063,000	6,874,000	9,171,000	8,135,000
Inside capes	4,476,000	3,438,000	3,410,000	3,251,000
Other tonnage	13,381,000	10,072,000	8,968,000	7,445,000
All destinations	42,909,000	37,062,000	53,784,000	37,323,000

Digitized by Google

The transportation of coal through tidewater ports for export or coastwise movement is an important industry. Table B18 gives the

Chart B 8.



movement of bituminous coal through the Atlantic ports for the years 1918 to 1921, inclusive. New York, Philadelphia, Baltimore,

Digitized by Google

Norfolk, and Newport News have extensive facilities for handling cars from the Pennsylvania and West Virginia coal fields. There are also facilities at many other ports for discharge to vessels as cargo or for bunkering or for receiving from vessels for delivery to railroad cars for local destination.

Improved methods of handling coal, such as automatic dumping and loading devices, have been introduced at the principal coal ports. These devices and the use of coal cars of 75 and 100 tons capacity have greatly increased the ability to handle in volume. The establishment of coal pools during periods of heavy movement has proved of great assistance by reducing the amount of switching necessary to effect delivery to vessel. When the movement for both export and coastwise destination is heavy the present facilities have been severely taxed, indicating the need for additional facilities to promptly and adequately meet the demand.

GREAT LAKES PORTS.

Table B17 and charts A38, A39, A41, and A45 indicate the facilities at ports on the Great Lakes available to handle iron ore, coal, and grain. As indicated further in chart B8 and Table B19 the movement of these commodities is in considerable volume. The present facilities have thus far proved ample to meet the need. At some ports on Lake Erie the ore and coal facilities are so correlated that the same freight cars which haul coal to the port are used to take ore away from the port. At other ports coal or ore alone, as the case may be, is handled. This involves a considerable movement of empty cars toward the port for ore loading and from the port for coal loading. The further correlation of these facilities is desirable and should be consummated wherever possible.

TABLE B19.—*Lake coal—Tons dumped into boats monthly.*

[Data from American Railway Association.]

Month.	1913	1914	1915	1916	1917	1918	1919	1920	1921
January									10,600
February									103,350
March	92,010	47,718							235,250
April	1,175,519	597,452	556,029	925,789	651,479	891,046	[1] 1,133,203	[1] 329,202	939,950
May	3,983,060	2,960,092	2,251,154	3,628,686	2,428,118	3,194,198	3,800,837	1,321,020	3,467,750
June	3,956,749	3,190,032	3,013,317	3,295,247	3,250,149	3,539,352	4,270,462	2,221,210	4,525,100
July	4,040,189	3,273,109	3,384,681	3,976,451	3,679,511	4,234,305	3,983,521	2,860,366	3,460,350
August	4,045,129	3,736,821	3,049,237	4,223,090	4,316,727	4,996,930	2,820,280	4,601,734	2,840,750
September	3,412,202	3,214,019	2,932,756	3,311,885	4,699,338	4,851,198	2,505,827	4,138,533	2,157,600
October	2,934,829	2,722,055	3,136,264	2,502,086	4,013,849	5,043,887	3,229,794	4,693,839	2,209,585
November	2,541,272	1,537,833	2,545,035	2,055,828	3,129,947				
December	649,388	104,576	638,901	773,874	659,638	[2] 2,637,326	[2] 1,006,468	[2] 3,504,123	[2] 1,447,400
Total	26,830,347	21,383,617	21,507,374	24,692,936	26,828,756	29,388,242	22,750,392	23,670,027	21,397,685

[1] Figures shown under April, 1919 and 1920 inclusive, represent tons dumped to April 30.
[2] Figures include November and December.

NONOPERATING PROPERTY.

Railroads have in many instances invested money in property not directly connected with operation. To attract business and to hold and develop traffic, hotels, restaurants, and lunch rooms have been

Digitized by Google

constructed and either operated directly or leased to individuals. Public resorts have been developed and advertised. In some cases property has been acquired which has no relation to the operation of a railroad. Table B1 shows the amount of the investments in nonoperating property which in 1911 was $130,236,094 and in 1920 approximately $260,000,000.

TRANSPORTATION SERVICE—MAINTENANCE OF PHYSICAL PROPERTY.

WAY AND STRUCTURES.

Not the least of the carriers' problems is the adequate and economical maintenance of roadway and structures. Tracks must be maintained in a condition for safe operation. Ties must be renewed as they decay; rails must be replaced as they wear; ballast must be renewed; embankments, culverts, and bridges must be given daily attention; embankments must be properly drained and protected from flood water. It is estimated that 66⅔ per cent of the wear on roadway and track is caused by the elements and only 33⅓ per cent by actual usage. This feature of maintenance, therefore, is not entirely measured by the use made of the tracks.

To prolong the life of ties and timber used in railroad construction and maintenance many railroads have established plants where ties and timber are treated with creosote or other chemical preservatives. This process postpones decay of ties many years and is now generally accepted as an economical process. Mechanical wear of ties is reduced by the application of tie-plates which prevent the rails from cutting too deeply into the tie. Maintenance forces of the individual railroad are usually in charge of an engineer who directs the expenditure of money appropriated to the maintenance of roadway and structures and sees that it is effectively spent. Each district of road is in charge of a roadmaster, who directs the work of the section crews and is responsible for the condition of track in his particular district. Section crews are assigned a specified number of miles of track and the section foreman in charge is responsible for the safe condition of his particular section.

TABLE No. B20.—*Maintenance of way and structures expenses segregated as between labor, material, and other expenses, Class I roads.*

Year ended—	Maintenance of way and structures.	Labor.	Material.	Other.[1]
June 30—				
1911	$348,004,080	$190,393,032	$121,070,619	$36,540,429
1912	348,470,704	190,648,312	121,232,958	36,589,434
1913	406,042,520	222,145,868	141,262,196	42,634,465
1914	403,682,593	220,854,747	140,441,174	42,386,672
1915	364,004,178	199,146,686	126,637,054	38,220,438
1916	404,514,144	221,309,688	140,731,514	42,472,942
Dec. 31—				
1916	421,775,812	230,753,547	146,735,805	44,286,460
1917	442,102,862	241,878,306	153,810,021	46,421,535
1918	649,794,953	422,821,576	164,073,226	62,900,151
1919	772,186,045	466,014,278	239,223,237	66,948,530
1920	1,032,490,872	620,423,764	306,340,041	105,727,057

[1] "Other" maintenance of way and structures expenses cover depreciation, etc.

Digitized by Google

Table B20 gives the total annual cost of the maintenance of way and structures 1911 to 1920, inclusive, together with a segregation of the cost of labor and material and all other items chargeable to this general account, such as depreciation, etc. The average cost of maintenance of way and structures per mile of track for 1911 was $1,058. In 1920 it was $2,738, an increase of $1,680 or 158.7 per cent, the increase being due to the high prices paid for labor and materials. In 1921 the cost per mile of track was $1,994, the decrease below 1920 being due in part to a decrease in the cost of material and labor, and in part to a program of deferred maintenance. The volume of maintenance work per man-hour shows an improvement over 1920, credited by railroads to better morale of the working forces.

While the increase in the cost of this maintenance was heavy, it does not clearly reflect the actual situation, for the reason that maintenance of way and structures is, to some extent, arbitrarily controlled by the financial condition of the carriers; in other words, maintenance may be deferred for a certain length of time without bringing about an unsafe condition. Eventually, however, all deferred work must be done or considerable hazard will result.

The following tables give the tonnage of rails purchased by the railroads of the United States from 1893 to 1920, inclusive, and the number of ties purchased from 1916 to 1921, inclusive, with the average of each per mile of track:

Tonnage of rails purchased by railroads and average per mile of track.

	Tons.	Average.		Tons.	Average.
1893	1,119,470	(1)	1908	1,726,224	5.2
1894	1,008,516	(1)	1909	2,725,847	7.9
1895	1,291,883	(1)	1910	3,290,712	9.3
1896	1,056,675	(1)	1911	2,405,330	7.3
1897	1,500,086	(1)	1912	2,885,222	8.5
1898	1,679,538	(1)	1913	3,052,635	8.8
1899	1,997,120	(1)	1914	1,792,986	5.1
1900	2,025,511	(1)	1915	1,891,340	5.2
1901	2,557,588	(1)	1916	2,506,822	6.8
1902	2,983,789	(1)	1917	2,046,575	5.5
1903	3,057,195	(1)	1918	1,883,393	5.0
1904	1,906,237	(1)	1919	2,335,300	6.2
1905	3,098,184	(1)	1920	2,505,388	6.6
1906	3,654,794	(1)	1921	2,168,364	5.7
1907	3,298,500	10.0			

[1] Not available.

Number of ties purchased by railroads and average per mile of track.

	Number.	Average.		Number.	Average.
1916	95,504,192	262.28	1919	88,001,507	234.41
1917	85,028,096	230.63	1920	93,856,524	248.96
1918	82,508,666	221.54	1921	90,355,475	239.46

These figures give a more accurate comparison of the extent to which the roadways have been maintained than the general maintenance charges because of the marked increases in the cost of labor, which is a large element in the latter figures. Included in these tables are the average tons of rail installed and the average number of ties applied

Digitized by Google

per mile of track, which gives a very clear picture of maintenance performance. During 1921 the railroads to a great extent deferred necessary maintenance work.

Maintenance of equipment—Locomotives.

Table B21 gives the total cost of maintenance of equipment for each year, 1911 to 1920, segregated to show the cost of repairing locomotives, freight cars, and passenger cars. It also indicates the average cost per locomotive owned, per freight car owned, and per passenger car owned. It will be seen that the average repair cost per locomotive owned increased from $2,559 in 1911 to $9,354 in 1920. In no other department of railroad maintenance have the costs increased to so great an extent. Not only have the costs of materials advanced in an excessive degree, but the cost of labor has increased in even greater ratio. Most of the repair work on locomotives is done by the railroads themselves in their own shops. Some railroads have found it necessary to avail themselves of the shops of the locomotive builders. This is done usually when their own shops are crowded with work or when they find that a saving may be effected by contracting the work with outside shops. The repairs of locomotives by outside shops usually include only those requiring heavy repairs.

TABLE B21.—*Total maintenance of equipment expenses and equipment repairs, retirements, and depreciation, Class I railroads—1911 to 1920.*

EQUIPMENT REPAIRS.

Year ended—	Total maintenance of equipment expenses.	Locomotives.	Average per locomotive owned.	Freight cars.	Average per freight car owned.	Passenger cars.	Average per passenger car owned.
June 30—							
1911	$415,590,400	$148,600,485	$2,559	$137,765,844	$64	$31,298,768	$667
1912	436,995,458	158,579,252	2,687	140,041,350	64	31,674,234	652
1913	499,988,331	177,634,238	2,903	164,983,762	73	34,267,121	690
1914	520,200,274	175,869,571	2,812	182,096,530	71	32,593,413	634
1915	496,739,561	158,993,384	2,559	162,841,807	71	32,497,659	617
1916	557,664,332	177,920,120	2,914	180,784,348	80	34,544,940	668
Dec. 31—							
1916	595,566,336	196,211,748	3,199	190,215,718	83	36,728,831	704
1917	685,428,913	247,732,198	4,003	217,310,282	93	42,174,246	796
1918	1,103,031,350	437,192,088	6,842	386,789,122	163	67,542,891	1,252
1919	1,226,532,195	462,341,583	7,115	447,789,370	187	80,674,958	1,500
1920	1,592,969,670	605,543,320	9,354	593,689,099	252	100,584,537	1,978

EQUIPMENT RETIREMENTS.

Year ended—	Locomotives.	Freight cars.	Passenger cars.
June 30—			
1911	$2,691,334	$11,017,699	$1,136,478
1912	4,168,170	13,361,559	1,312,598
1913	5,250,777	15,307,308	1,510,109
1914	2,834,866	12,769,412	1,067,953
1915	3,453,751	10,140,629	819,027
1916	5,272,211	15,026,120	1,898,065
Dec. 31—			
1916	4,344,975	13,699,063	1,594,821
1917	1,140,185	6,183,661	677,043
1918	Cr. 63,458	3,080,199	560,246
1919	1,603,627	428,233	281,436
1920	603,502	Cr. 164,329	550,056

Digitized by Google

TABLE B21.—*Total maintenance of equipment expenses and equipment repairs, retirements, and depreciation, Class 1 railroads—1911 to 1920*—Continued.

EQUIPMENT DEPRECIATION.

Year ended—	Locomotives.	Average per locomotive owned.	Freight cars.	Average per freight car owned.	Passenger cars.	Average per passenger car owned.
June 30—						
1911	$12,678,712	$222	$30,211,264	$14	$5,313,659	$11
1912	13,141,084	222	30,565,671	14	5,980,978	12
1913	17,662,219	289	34,945,453	16	7,175,395	14
1914	22,254,401	356	42,875,443	19	8,376,992	15
1915	21,762,183	350	46,974,928	20	8,476,875	15
1916	23,361,797	383	50,354,659	22	9,200,706	17
Dec. 31—						
1916	24,538,007	400	53,745,625	23	9,602,061	18
1917	26,995,463	434	56,321,250	25	10,237,866	19
1918	29,726,497	465	63,401,556	27	10,851,022	20
1919	35,764,485	550	69,773,475	29	11,229,721	21
1920	38,689,490	597	79,704,232	34	11,670,109	21

TABLE B22.—*Locomotives repaired in commercial shops.*

	1912 [1]	1913	1914	1915	1916
Number of locomotives repaired	216	200	191	211	155
Cost of materials	$924,157	$1,141,459	$816,203	$1,161,128	$958,459
Labor cost	891,944	835,978	868,732	625,304	369,169
Total cost including overhead expense	1,684,712	2,000,141	1,722,245	2,265,546	1,614,228
Per cent of labor cost to total cost	23.2	21.7	21.4	23.1	22.9
Per cent of material cost to total cost	54.8	57.0	47.0	52.1	52.8

	1917	1918	1919	1920	1921 [1]
Number of locomotives repaired	75	223	119	556	68
Cost of materials	$377,667	$424,815	$252,601	$2,700,101	$232,483
Labor cost	185,012	581,940	366,094	3,683,717	338,544
Total cost including overhead expense	792,471	1,425,993	1,064,767	10,155,725	1,455,619
Per cent of labor cost to total cost	23.3	40.8	28.7	36.2	22.0
Per cent of material cost to total cost	47.6	29.7	23.7	26.5	20.9

[1] Figures are for American Locomotive Co. only.

Table B22 shows the number of locomotives, cost of materials, cost of labor, and total cost on locomotives repaired at a number of the principal commercial locomotive shops for 1912 to 1921, inclusive. It has been difficult to secure figures from the railway companies of work done in their own shops which may be properly compared with the work done in outside shops, for the reason that the system of accounting is not the same. The railroads do not directly allocate to the repairs of locomotives the overhead and general expense incident to the operation of their shops.

There appears to be no good reason for failure on the part of the railroads to maintain accurate cost accounts. Efficiency can not be attained without accurate cost data.

Maintenance of equipment—Cars.

The repair of freight and passenger cars and the costs are responsive to the same conditions as in the case of locomotives. The in-

Digitized by Google

crease in the amount paid for materials and labor has been heavy; in no other branch of the service have the increases of labor costs been so marked. In addition to the repair of cars in the general shops it is necessary to make minor repairs and in some cases general repairs in shops located at the various freight terminals.

The process of handling bad-order equipment is as follows: Each incoming and outgoing freight and passenger train is inspected by car inspectors, who see that all of the safety appliances required by law are intact and that the car is in safe condition to run. Cars found unfit to run are switched out and moved to the repair tracks, where repairs are made by car repairers and their helpers. If the work is so extensive that the repairs can not be made at the smaller shop and the cars can still be moved safely, they are sent to the general shop, where the necessary repairs may be made. Each car is given a careful inspection as it passes each terminal, thus further protecting the safety of trains, both freight and passenger. The repairs to passenger cars are made promptly, as the number owned will not permit extensive retirements for repairs or deferring repairs. In the case of freight cars, however, repairs may be deferred indefinitely, dependent upon the demand for equipment. The average number of cars in bad order is between 5 and 7 per cent of the total on the line; possibly the latter figure would be more representative. Beginning in the fall of 1920 and continuing to the present time there has been an abnormal number of bad-order cars, reaching at one period 16 per cent of the total. This situation is shown graphically in chart 39, which shows the increases and decreases in the number of bad-order cars during the past several years.

The repair of railroad locomotives and passenger and freight cars requires a plant equipped with much costly machinery, furnaces, air compressors, power generating and distributing machinery, and a large investment in consumable tools and in small equipment. To house such machinery and equipment, extensive buildings are required. Also large areas must be made available for storage, erection, and switching yards, having adequate trackage and other facilities for receiving and handling materials and for the movement of cars being repaired. Such an establishment is necessary for economical freight car repair work, whether done by a railroad or by a contractor specializing in this field; its maintenance of such an establishment entails labor and expense, the benefits of which are not reflected directly in the output of the plant. The machinery must be repaired or replaced when it wears out, power must be supplied to operate it, and labor must be employed to maintain the buildings, tracks, fences, and other facilities. Clerks must be employed to record the transaction involved, to keep the time of the labor employed, to maintain proper inventories, and to conduct correspondence. Superintendents and foremen must be employed to supervise and direct the work. Managers are required to coordinate the activities of different departments. Purchasing agents are necessary in the procurement of materials and supplies, and other officials and employees are concerned with the physical and operating problems of the department. All such elements of cost as these go to make up the total of overhead or operating expense.

Because of the desire to hasten repairs or to avoid excessive costs, the carriers operating in the vicinity of the shops of car builders fre-

quently contract with them for the repair of freight and passenger cars requiring general overhauling.

Table B23 shows the cost of repairs of cars in commercial shops from 1912 to 1921.

TABLE B23.—*Statement showing the average costs and selling prices based on returns covering the repair of 133,699 freight cars at commercial shops.*

Year.	Number of cars covered.	Cost of materials and supplies.	Cost of labor.	Cost of supervision.	Operating expense.[1]	Total cost.	Selling price.
1912	9,129	$250.41	$140.52	$14.43	$16.37	$421.73	$429.66
1913	12,291	316.62	170.05	10.25	20.26	517.18	516.72
1914	10,978	286.19	146.12	9.42	15.33	457.06	494.99
1915	19,073	193.72	152.45	7.26	12.59	366.02	394.03
1916	16,477	221.91	154.90	9.42	15.31	401.54	442.06
1917	10,077	314.13	174.01	13.57	18.20	519.91	562.75
1918	5,486	395.63	232.29	27.18	30.02	685.12	734.52
1919	6,624	624.31	322.68	52.56	68.76	1,068.31	1,033.77
1920	24,786	575.37	377.55	38.04	52.93	1,043.89	1,052.64
1921	18,778	524.29	260.88	25.64	28.77	839.58	875.18
	133,699						

[1] Operating expense includes the cost of repairing buildings and machinery, insurance, property taxes, fire protection, and other similar items.

The principal private car-line companies maintain shops at convenient points and repair their own equipment; those that do not maintain shops either have their cars repaired in commercial shops or in the shops of railroad companies.

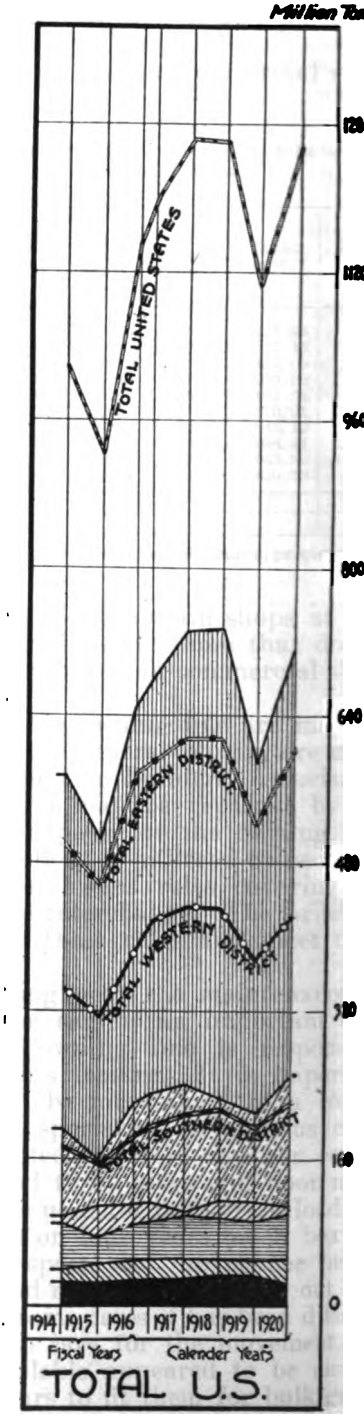
Running repairs of cars foreign to the owning line are made at the expense of the line holding the car. General repairs are made under rules promulgated by the Master Car Builders' Association, and are termed "owners' defects" and may be repaired by the holding line, but in all cases at the expense of the owning line. This applies to private-line cars as well as to railroad-owned cars. The Master Car Builders' Association makes rules covering the repair of cars received and delivered in interchange. The principal railroads of the country subscribe to these rules and meet their requirements.

In addition to the repair of running gear the maintenance of the superstructure or container of the cars is an important consideration. Generally speaking, the owning line is responsible for the repair and maintenance of this feature. It is important that box-car equipment, for example, be maintained in a condition which will enable the safe transportation of various commodities. It must give adequate protection from weather conditions, the roof must be substantial and tight, sides and floor must be well coopered so that the car may be used for bulk-grain loading, if need arise. During the past three or four years much box-car equipment has deteriorated in this respect, and during the heavy grain-shipping season it has been found necessary to switch out box cars fit for bulk-grain loading and in some cases it has been difficult to find sufficient of this description to care for the movement, although the total number of cars available appeared to be ample. Occasionally the minor coopering of cars to fit them for bulk-grain

Digitized by Google

Digitized by Google

GINATED 1914–1920, TONS.



70678°—22. (Face p. 255.)

Digitized by Google

loading is done by the shipper at his own expense. This, however, is only a temporary expedient.

Generally the carriers must keep their equipment in fit condition to avoid loss and damage to goods in transit. As all box cars are not fit for grain loading it appears necessary that much work be done before the next harvest so that cars fit for grain traffic may be promptly supplied. The cars of some railroads have been kept in good condition to the extent that the owners were able to get possession of them and give them the necessary attention. The cars of some other roads, especially those which have not made recent purchases of new cars and whose cars have depreciated owing to financial inability properly to maintain them are not now in a normal state of repair.

The methods of accounting for repairs to freight equipment made by other than the owning line are most inefficient. The owner who pays for the work frequently has no check whatever that the work is actually performed, and in the case of a car away from the owning line for a long period of time, being handled and repaired by a number of lines, the owner could not check the repairs made after the car is returned. There is opportunity for improvement in this important matter.

CAR SERVICE—DISTRIBUTION.

Before discussing car service, it appears desirable to indicate the volume of tonnage originated throughout the country, and for this purpose Tables B24, B25, and B26 and chart No. B10 have been prepared. Table B24 on page 592 gives the tonnage originated under the several classifications for all railroads in 1900 and 1910, and for Class I roads for the year ended June 30, 1911, to the year ended December 31, 1920. There is also shown the tonnage originated under this same classification in each district for the years 1914 to 1920, inclusive. The products of mines supplied the larger portion of the tonnage for the entire country; in 1914 they were 54.8 per cent of the total and in 1920, 56.8 per cent. The next in order is the manufactures and miscellaneous, supplying in 1914 16.7 per cent and in 1920 20 per cent of the total tonnage. The products of agriculture supplied 11.9 per cent of the tonnage in 1914 and 8.8 per cent in 1920; the products of forests 8.3 per cent in 1914 and 8 per cent in 1920; the products of animals 2.8 per cent in 1914 and 2.1 per cent in 1920. Merchandise and less-than-carload freight supplied 5.1 per cent of the tonnage in 1914 and 4.2 per cent in 1920.

Digitized by Google

TABLE B26.—*Statement showing commodities loaded by calendar months, Class I railroads—Carloads.*

[Figures compiled from weekly reports ending Saturday. Loading averaged for such days in weeks that occur in different months.]

	Grain and grain products.			Live stock.			Coal.			Coke.			Forest products.		
	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919
January	177,222	161,156	176,992	139,455	151,684	172,498	741,153	824,597	804,857	34,068	42,859	(1)	209,070	244,439	225,351
February	147,874	141,425	126,325	113,007	116,602	133,548	594,287	720,163	570,496	35,826	39,825	(1)	213,314	240,372	226,278
March	164,077	148,531	160,724	117,880	120,890	129,992	576,753	827,078	623,592	28,167	53,491	(1)	226,854	291,387	250,655
April	145,041	118,063	163,235	119,240	114,314	127,492	583,716	688,129	632,140	20,076	44,876	(1)	206,615	265,316	233,449
May	161,133	130,041	140,460	111,416	127,265	121,611	658,022	713,029	682,060	21,622	44,801	(1)	207,598	234,882	231,253
June	181,081	149,534	136,947	121,752	124,500	122,278	696,313	838,934	778,707	21,065	51,300	(1)	221,570	268,005	271,205
July	239,856	150,440	199,551	104,223	109,734	127,580	634,099	843,220	840,520	17,056	51,275	(1)	182,077	242,681	262,052
August	269,877	184,822	211,665	124,398	122,862	130,832	699,192	930,018	790,192	19,874	66,750	44,026	202,546	289,230	272,304
September	239,518	187,691	204,189	129,596	135,762	152,660	705,830	865,696	877,871	21,408	67,463	46,066	201,248	266,594	274,381
October	204,976	172,470	184,213	148,266	146,486	177,314	792,609	968,623	962,533	26,184	69,127	42,468	209,965	259,359	257,872
November	164,652	151,808	173,705	136,589	151,204	175,821	669,235	934,625	500,724	28,034	62,970	46,895	211,662	231,827	248,016
December	186,545	147,037	170,962	129,522	122,820	161,226	582,839	922,278	766,161	30,618	54,165	46,062	199,560	192,331	235,739
Total	2,281,852	1,843,018	2,048,968	1,495,344	1,553,424	1,732,852	7,934,048	10,082,450	8,829,883	903,898	648,902	225,517	2,483,079	3,056,923	2,988,897

	Ore.			Merchandise.			Miscellaneous.			Total.		
	1921	1920	1919	1921	1920	1919	1921	1920	1919	1921	1920	1919
January	37,408	45,479	64,977	584,010	601,731	(2)	1,022,182	1,334,563	1,822,789	2,935,518	3,406,508	3,267,474
February	35,295	51,492	65,116	730,996	552,209	(2)	864,401	1,250,693	1,625,220	2,735,000	3,112,781	2,747,363
March	29,160	71,222	66,162	933,563	743,542	(2)	1,043,669	1,553,108	1,889,731	3,120,123	3,818,249	3,120,728
April	24,980	83,639	94,612	922,059	645,427	(2)	1,024,626	1,248,497	1,853,456	3,046,353	3,208,231	3,104,384
May	100,396	241,269	187,866	901,845	650,064	(2)	1,006,632	1,441,010	1,796,459	3,168,064	3,612,353	3,159,709
June	130,839	324,997	289,614	947,161	709,517	(2)	1,106,764	1,549,670	2,010,283	3,426,545	4,016,757	3,609,019
July	131,665	324,351	320,377	879,383	749,824	(2)	1,072,777	1,429,446	2,142,365	3,261,136	3,901,031	[3] 3,918,631
August	142,960	351,921	191,738	968,747	911,741	588,195	1,227,599	1,493,882	1,631,110	3,655,198	4,357,226	[3] 3,870,838
September	123,727	347,575	289,465	971,527	885,597	625,634	1,248,530	1,434,034	1,709,921	3,641,384	4,190,412	4,179,187
October	89,459	320,995	210,915	942,211	909,739	647,141	1,314,908	1,480,947	1,708,522	3,728,578	4,338,246	4,185,979
November	33,930	188,118	116,124	953,899	849,667	644,540	1,080,706	1,254,521	1,586,097	3,278,707	3,824,740	3,491,922
December	24,694	62,844	53,943	941,825	808,016	660,109	945,113	1,022,808	1,430,892	3,040,616	3,332,299	3,525,094
Total	904,513	2,413,898	1,949,909	10,677,226	9,017,074	3,165,619	12,957,857	16,508,179	21,201,811	39,037,817	45,118,863	[3] 42,180,328

[1] Included in coal.
[2] Included in miscellaneous.
[3] Detail for Michigan Central not shown, 26,186 and 10,770 included in totals—36,902 included in total for year.

Digitized by Google

The total tonnage originating in the United States increased from 583,351,351 tons in 1900 to 1,256,379,734 tons in 1920, or 114 per cent. The products of mines increased in 1920 24.2 per cent over the tonnage of 1914. Manufactures and miscellaneous increased 30.7 per cent, the products of agriculture 12.1 per cent, the products of the forest 10.6 per cent and the products of animals decreased 0.9 per cent below the figures for 1914. Merchandise (all less-than-carload freight) increased 32.2 per cent. The increase in the total tonnage over 1914 was 22.8 per cent. During the same period the total number of freight cars owned by the railroads decreased 4,130, but the aggregate carrying capacity increased 7,043,166 tons, or 7.7 per cent. Products of agriculture originated in 1919 were 115,033,319 tons; in 1920, 110,839,554 tons; and in 1921, 114,016,652 tons. The increase in 1921 was wholly in the western district, there being a slight decrease in the eastern district and a heavy decrease in the southern district. The increase in the western district is partly due to the failure of the railroads to supply cars during 1920 until after the price broke, thus contributing to the heavy carry over to 1921.

No data are available to indicate the present average haul of each of the various commodities. In 1914 a special study was conducted by the Interstate Commerce Commission and it was found that some of the commodities moved average distances as follows:

	Eastern district.	Western district.	Southern district.	United States.
	Miles.	*Miles.*	*Miles.*	*Miles.*
Products of agriculture	239.8	227.4	184.6	221.6
Products of animals	274.9	234.5	156.1	242.0
Coal	145.6	156.5	163.1	152.0
Lumber	159.1	220.8	176.0	192.0

In 1914 the average through haul per ton, Class I railroads, all commodities, was 260 miles. In 1920 it was 324.9 miles and in 1921 326.2 miles. This indicates that better use was made of the decreased number of freight cars in moving an increased tonnage over longer distances.

The following tables give the tons originated per car owned and the revenue ton-miles per car owned, and per ton of carrying capacity:

Year.	Tons originated.		Revenue ton-miles.	
	Per car owned, tons.	Per ton of carrying capacity.	Per car owned.	Per ton carrying capacity.
1914	439.9	11.2	122,514.1	3,141.4
1915	397.7	9.9	117,668.1	2,941.7
1916	509.8	12.3	147,881.3	3,660.4
1916 (calendar)	520.0	12.6	156,634.2	3,820.3
1917	547.4	13.2	171,361.6	4,120.1
1918	543.2	13.0	174,314.5	4,190.2
1919	464.4	11.6	154,295.9	3,662.4
1920	541.1	12.8	176,740.5	4,198.1
1921	401.4	.....	130,971.1	.....

Digitized by Google

We have, then, the following increases over the year 1914:

	1920 over 1914.	1921 over 1914.
	Per cent.	*Per cent.*
Tons originated	22.9	15.1
Average haul	22.9	25.4
Revenue ton-miles per car owned	44.2	6.9
Revenue ton-miles per ton of carrying capacity	33⅓	.....
Tons originated per car owned	23.2	18.5
Tons originated per ton of carrying capacity	14.2	.....
Aggregate carrying capacity	8.8	.....

Decrease.

Car service is the branch of railroad operation most closely associated with the shipping public. The supplying of cars in adequate number of a suitable kind and in fit condition for the commodity offered for transportation is one of the most important problems encountered by rail carriers, and directly influences the volume of tonnage transported, the price of commodities and the revenues and expenses of the carriers.

Increased demand for cars either during seasonal crop movements or because of general business prosperity invariably results in a car shortage of varying extent and duration. When the volume of shipments of a commodity in strong demand is restricted by car shortage, a stiffening of prices results, and when the restriction is removed by an ample supply of cars the market at once reacts.

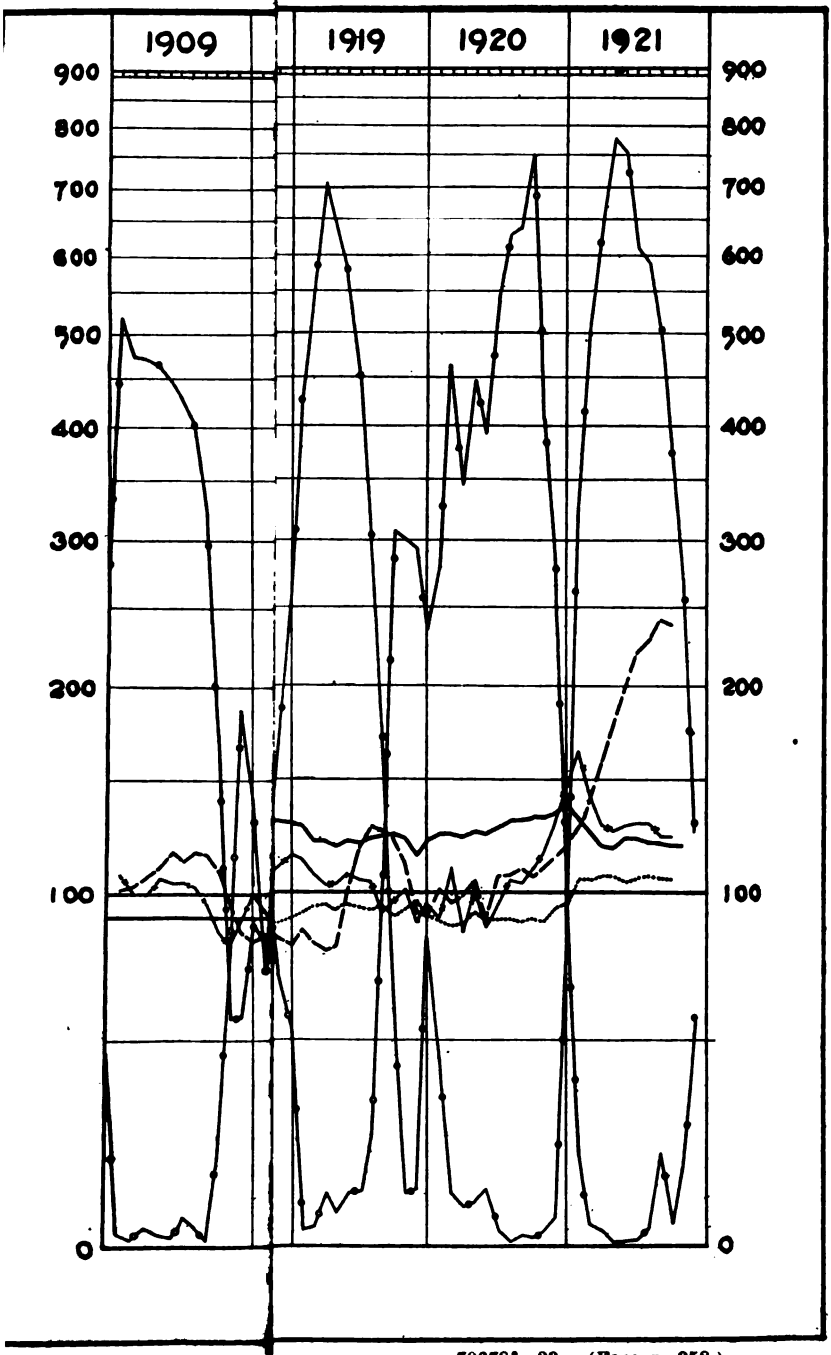
During each period of general car shortage it is found that in some portion of the country carriers report a surplus of equipment; conversely during periods of largest car surplus a car shortage exists on lines of certain carriers and in certain districts. Prior to 1919 this was especially noticeable although the same situation existed in less degree in subsequent years.

By reference to chart B9 and Table B27 it will be found that during the index year 1913 in January there was a surplus of 50,659 and contemporaneously a shortage of 33,601, in July a surplus of 70,740 and a shortage of 7,036 cars, and in November a surplus of 38,276 and a shortage of 40,118 cars. During 1916, a year of heavy traffic, the surplus in January was 70,391, and the shortage 23,310, in July the surplus was 68,035 and shortage 15,801, and in November the surplus was 24,837 and shortage 139,745 cars. In 1919–20 and 1921 an improvement in this respect is indicated, reflecting a more general distribution and utilization of equipment than obtained in previous years.

The movement of empty freight cars is a subject of considerable importance. So many influences increase or decrease the volume of empty car mileage that it is difficult to ascertain what a normal empty movement is. Some transportation authorities consider that the empty mileage should not exceed 30 per cent of the total of both loaded and empty, or 42.8 per cent of the loaded movement. The fluctuations from these figures are considerable. A review of the past 14 years indicates that the empty car mileage is seldom below 30 per cent of the total movement. (See Tables B28 and

Digitized by Google

3, 100).



Digitized by Google

Digitized by Google

B29 and chart B9.) It would appear, therefore, that the normal must be higher than that. Thirty per cent represents a favorable condition. During periods of business depression, especially immediately following a period of heavy traffic, a considerable increase is apparent. This increase is coincident with the decrease in loaded movement, but does not continue in the same degree throughout the period of light traffic, although generally it remains higher than when traffic is heavy. The movement of empty cars is induced by, first, relocation to loading points; second, relocation to owners' rails.

TABLE B29.—*Operation—Steam railroads.*

	1911	1912	1913	1914	1915	1916
Average haul per revenue ton	258.81	261.02	259.99	260.19	275.80	276.88
Ratio, tare and nonrevenue to revenue ton-miles	139.4	139.1	135.7	143.5	146.1	133.0
Ratio tare ton-miles to net ton-miles	117.3	116.9	113.9	121.0	122.6	112.0
Ratio of empty to loaded car-miles	45.1	43.5	42.7	47.5	50.7	45.1
Net tons per loaded car	21.7	22.2	23.3	23.2	23.4	24.6

	1916	1917	1918	1919	1920	1921
Average haul per revenue ton	282.99	292.57	301.47	313.29	324.9	326.2
Ratio, tare and nonrevenue to revenue ton-miles	124.7	121.5	118.2	125.5	122.8	147.6
Ratio tare ton-miles to net ton-miles	105.5	103.0	101.1	107.6	104.4	120.6
Ratio of empty to loaded car-miles	42.6	42.4	47.7	45.6	47.3	58.7
Net tons per loaded car	25.0	27.0	29.3	27.6	29.6	27.6

Relocation to loading points is a necessary movement. Due to unbalanced traffic, it can not be entirely effected by a loaded movement. Normally the preponderant tonnage movement is from lines west of the Mississippi and south of the Ohio and Potomac Rivers to lines east and north thereof. There are also empty movements made necessary by the relocation of classes of equipment required for particular traffic. Coal cars being returned to the mines can be given return loading to a limited extent only. Refrigerator cars—one of the heaviest types of car—are generally moved empty to producing districts.

On the lines of individual carriers the traffic is frequently an unbalanced movement necessitating a haul of empty cars. In some cases lines generally parallel haul some classes of empty cars of the same type in opposite directions.

Relocation to owners' rails is accomplished through rules formulated by the American Railway Association and subscribed to by member carriers.

Until July 1, 1902, settlement for freight-car hire between railroads was made on a mileage basis, a reciprocal rate of 6 mills per car-mile being allowed for cars in general service, such as box, flat, coal, and stock; while for special cars, such as refrigerator, tank, etc., the rate was three-fourths cent per mile. There were slight variations from these rates, according to special conditions and territories.

Digitized by Google

On July 1, 1902, a change was made to the "per diem" basis which has continued to the present time and at the following rates:

	Per car per day.
July 1, 1902, to June 30, 1906	$0.20
July 1, 1906, to June 30, 1907	.25
July 1, 1907, to Feb. 29, 1908	.30
Mar. 1, 1908, to Feb. 28, 1910	.25
Mar. 1, 1910, to Dec. 31, 1912:	
March, April, May, June, and July	.30
January, February, August, September, October, November, and December	.35
Jan. 1, 1913, to June 30, 1913	.45
July 1, 1913, to July 30, 1914	.45
July 31, 1914, to Dec. 14, 1916	.45
Dec. 15, 1916, to Mar. 31, 1917	.75
Apr. 1, 1917, to Feb. 28, 1920	.60
Mar. 1, 1920, to Oct. 31, 1920	.90
Nov. 1, 1920, to date	1.00

The tendency of the mileage basis was to delay cars, for when they were not moved the owner received no compensation. Demurrage regulations were not then in effect, and there was no penalty against a car standing idle when in either railroad or trader's possession. The activity of the trader and the railroad in car handling varied with the initiative of the individual, there being a general recognition of but one law—that of serving individual requirement. There was the further difficulty of railroads not being compensated at all times for mileage made by their cars on other roads and not reported by error or for other reason.

To correct the difficulties existing under the mileage basis in securing payment of car hire and to guard against misuse of equipment and prevent undue delays the per diem method of payment was adopted as of July 1, 1902. Under this method settlements are made between railroads each calendar month or any portion thereof, the holder paying the owner at the current per diem rate for the full time (calendar days) the car is shown by the records to have been on its rails.

The per diem rate is fixed on a basis of cost of ownership, including all factors, this being checked periodically, generally once each year, and it is intended to partly cover the cost of ownership and partly as an incentive to secure the return of cars to owners' rails. During seasons of heavy demand for cars there is a strong inclination to hold and use cars belonging to other lines. This is especially true of lines owning an inadequate supply of cars. On the other hand, during periods when the demand is light the per diem rate proves to be a strong incentive to move cars to the owning lines and avoid the payment of per diem charges, or, by loading home cars to off-line points and moving cars of other lines home empty to secure a credit car-hire balance.

This system of car-hire payments and the practice of railroad managers of moving foreign cars home empty and loading home cars to off-line points in some cases works a hardship on the weaker and less fortunately situated lines. During 1921 a weak railroad owning about 35,000 cars paid on the average $4,073 daily in excess car-hire payments, while a connection, more fortunately situated, profited by approximately $6,400 per day during 1921 by credit car-hire payments.

Digitized by Google

The present system of car-service rules and car-hire payments is predicated upon ownership and control by individual lines, and from that standpoint is possibly the best system thus far devised. The commerce of the country should not, however, be hampered by shortage of railroad cars for long periods of time, nor is it just or right that some sections of the country shall during periods of prosperity suffer from car shortage when at the same time other districts are being well supplied.

Some public opinion is opposed to unjust discrimination in car supply (1) between individuals, (2) between districts located on the same railroad, (3) between districts geographically distinct. There is also a desire on the part of many shippers, as a primary requisite to a correct and equitable distribution of cars, to have ratings established for such distribution on individual lines similar in principle to those now established by law for coal mines. The necessities of this situation appear to demand a uniform system for the handling of railroad freight cars which will make possible, (1) the most efficient use of such equipment; (2) equitable distribution of available cars during periods of car shortage between individuals and between districts and territories; (3) reduction of the empty freight-car mileage to the movement made necessary by demands in originating territory.

That more efficient use of equipment will minimize the effect of car shortages is evidenced by the fact that during the period of the most acute car shortage of record, reaching a net shortage of 146,287 cars in September, 1920, this shortage if distributed throughout the country would have been less than the number of cars required for one day's loading.

Car distribution to individual shippers involves a heavy responsibility. On some railroads an attempt is made to pro rate cars to shippers during time of car shortage upon the basis of definite ratings. These ratings are in some cases based upon the shipper's ability to ship or produce for shipment, or upon the amount on hand conveniently located and offered for shipment. There are many opinions as to the proper basis for car distribution. Any plan, however, which definitely establishes the relation of each individual shipper to all shippers in a given district upon an equitable basis has accomplished most desirable results.

The movement of cars upon the individual railroad is in charge of a superintendent of transportation or a superintendent of car service. This officer directs the movement of empty cars as between the several divisions of the railroad, distributing cars among the divisions in accordance with requirements and the supply available. The distribution of cars to individual shippers is in direct charge of the division car distributor, who reports to the chief dispatcher. During times of car shortage the available supply is pro rated to the several divisions, and as between individual shippers in an equitable manner and without regard to the character of the commodity offered for shipment. Shipments of perishable freight, however, are given preference in car supply. A consistent effort is made to avoid unjust discriminations.

CARS FOR GRAIN.

Distribution of cars for grain during periods of car shortage is generally based upon a rule approved by the Interstate Commerce

Digitized by Google

Commission in Farmer's Elevator Case 47 I. C. C. 475. In this case the commission proved as reasonable and fair a rule of the defendant railroad which distributed cars during periods of car shortage in the relative proportion in which different shippers tendered grain for shipment, such grain being actually on hand and conveniently located for prompt loading. It also expressed the view that with all elevators filled, shippers with the largest elevator that offered all of their grain for shipment would be given the largest proportion of available cars. It is the duty of railroads to furnish cars according to the freight offered for shipment. It follows from this that the shipper who offers the largest quantity of freight is entitled to the largest share of available cars.

The grain-originating railroads generally endeavor to assemble a supply of suitable box cars before the grain is ready to move. This is accomplished by assembling their own cars, as well as such suitable foreign equipment as may be found upon the line; and generally the supply thus assembled is sufficient to move a very considerable quantity of grain. Inevitably, however, because of the slow return movement by connecting lines, a shortage develops in the grain-originating territory before a large part of the grain has been moved. And, as indicated in Table B27 referred to, a shortage of box cars is much more pronounced in the grain-shipping months of September, October, and November; and in no year of record have orders for cars been fully supplied during these months.

The safeguards as to distribution of available grain cars during periods of shortage are necessary, but what is more necessary is an addition to the car supply and more efficient handling, so that a car shortage will not develop.

CARS FOR COAL.

The distribution of empty cars for coal loading has for many years been the subject of much controversy between the railroads and shippers. The Interstate Commerce Commission has heard innumerable complaints, and the Congress has intervened by directing the investigation of certain phases of coal-car distribution, and finally enacted paragraph 12, section 1, of the transportation act, reading as follows:

> It shall also be the duty of every carrier by railroad to make just and reasonable distribution of cars for transportation of coal among the coal mines served by it, whether located upon its line or lines or customarily dependent upon it for car supply. During any period when the supply of cars available for such service does not equal the requirements of such mines, it shall be the duty of the carrier to maintain and apply just and reasonable ratings of such mines and to count each and every car furnished to or used by such mine for transportation of coal against the mine.

Prior to the enactment of this clause the Interstate Commerce Commission held many hearings upon complaints brought either by shippers themselves or by State railroad commissions, the outstanding cases being the Railroad Commission of Ohio et al. *v.* Hocking Valley Railway Co., 12 I. C. C. 398, and Traer *v.* C. & A. Railroad Company, 13 I. C. C. 451. Based upon these decisions, the United States Railroad Administration formulated a set of rules to govern the distribution of cars of coal during times of shortage. These rules provide for a method of rating mines and further provide for the distribu-

Digitized by Google

tion of cars as between mines conformable to the established ratings. These rules have been modified from time to time, but in all essential respects the railroads are now governed by them. The enactment of paragraph 12, section 1, above referred to, was in fact the enactment into statute law of the rule of the Interstate Commerce Commission as laid down in the Hocking Valley and Traer cases and approved by the Supreme Court. Cars are distributed to coal mines in accordance with established ratings. These ratings are based upon the daily capacity of each mine to produce, with suitable deductions for lost time and shipment by other than steam railroads. In general, these rules may be said to meet the situation. Sufficient cars, however, should be supplied so that a car shortage will not occur.

Reference to Table B27 discloses the fact that in each year of which we have record there has been a shortage of coal cars during certain months of the year. Certainly this situation requires additional equipment, or more efficient handling, or both.

CARS FOR LIVE STOCK.

Sheep, cattle, and hogs are handled almost exclusively in stock cars of railroad and private ownership, the latter being comprised chiefly of cars owned or controlled by the larger packing interests and which totals about 4½ per cent of all stock cars in service. There is more or less local movement in box cars; this, however, is insignificant.

Complete car distribution is made to the extent that stock cars are or can be made available. The necessity for prompt movement is recognized and every effort made by railroads to fill all demands. Railroad-owned stock cars are suitable and used to some extent for commodities other than live stock; whenever needed, however, for stock movements these cars are promptly ordered withdrawn from miscellaneous service and returned to transportation of stock.

When private-line stock cars are used shippers may have a distributive share of the railroad-owned stock cars in addition only if the number of privately owned cars placed do not equal or exceed the distributive share for all live-stock shippers at that station or in that territory. In that case the total number of stock cars made available for such shipper shall not exceed the percentage of distribution of cars for stock loading given to all shippers at that station or that territory.

While stock cars are in no sense pooled, there is more or less relocation as between railroads at times somewhat contrary to ownership in order to take care of emergencies which may develop quickly in different sections of the country. Such relocation may be made between railroads acting directly or, as is frequently the case, through the Car Service Division of the American Railway Association. It occasionally happens that there is a shortage of eastern roads stock cars for a movement east from Chicago, with a more or less plentiful supply of western roads stock cars available, then western roads cars are used for the eastern movements, arrangements therefor being made between the representatives of the roads concerned at Chicago.

This method does not in all cases result in meeting the situation promptly. Car shortages develop before the originating line is able

Digitized by Google

to secure sufficient cars to meet the demand. This important loading should be fully protected by additional equipment.

PERISHABLES.

The supply of refrigerator cars for loading of perishable products is very important. This matter is detailed to some extent in another portion of this report. Emphasis, however, should be laid upon the necessity of carriers supplying without further delay a sufficient number of refrigerator cars to meet the peak demands of traffic requiring such equipment.

The handling of refrigerator cars by private car lines has been eminently successful. The extension of ownership and control by private car lines of the railroad-owned refrigerator cars would be beneficial. Unless the carriers promptly arrange for additional equipment and the more efficient use of refrigerator equipment, an emergency will be created; and it is the desire of this commission to point out the necessity for promptly handling this matter to prevent a shortage of refrigerator cars which invariably results in severe losses to the producer.

INTERCHANGE.

The interchange or transfer of loaded or empty cars between the individual railroads is an important feature of operation. Empty cars are interchanged in accordance with the rules of the American Railway Association or upon the order of its car service division, transmitted through the superintendent of transportation of the railroads involved. At the interchange or junction point each line maintains a car inspector who passes upon the physical condition of the loaded or empty car and accepts or rejects it as its condition indicates. Frequently only one car inspector is employed, acting jointly for both railroads. These car inspectors are governed by the rules of the Master Car Builders Association. Loaded cars are interchanged by transfer from one line to another, accompanied by a transfer slip issued by the delivering line containing all necessary information for the movement of the cars over the lines of the receiving carrier and succeeding lines to destination; or they are accompanied by a through waybill issued at point of shipment and containing essential information for movement to destination. The former method frequently results in delay to the cars. The latter method is the better and should be adopted for the movement of all interline carload freight.

For over 30 years the Railway Accounting Officers Association has advocated the adoption of through waybilling for all interline shipments. The need and desirability for the extension of through waybilling is well understood by railroad officers. Action in the matter has been delayed by failure to establish joint through rates and simple two figure percentage divisions. The railroads are spending large sums annually for clerk hire in auditing offices to compute divisions of freight earnings fully one-third of which could be saved by a simplified method of apportioning interline revenues. A woeful lack of efficiency is apparent in this important matter.

Objection to the adoption of interline waybilling is made by railroads who are either intermediate lines for a considerable volume of

Digitized by Google

through traffic or originate a larger volume of traffic than they haul to destination. These lines prefer junction settlement of their freight bills to enable them to recover the balance due more expeditiously. This objection might well be overcome by the establishment of regional audit clearing houses at convenient points.

The adoption of through interline waybilling will reduce delays to traffic at junction points, and save at least $20,000,000 annually to the carriers by reduced expense for clerk hire and in undercharges due to errors in waybilling.

CAR SERVICE—BAD-ORDER CARS.

The supply of freight cars is somewhat influenced by the number of cars temporarily withdrawn from service on account of bad order. At present the number of cars out of service on account of bad order is so great that an early and decided revival of business would produce a difficult situation.

As reflected in Table B30 and Chart B9, the number of cars in bad order increased rapidly during the decline in traffic beginning in November, 1920. This increase was coincident with a heavy movement of cars to the owners rails. (See Table B31.) The fact that the number of bad-order cars did not increase materially during the six months beginning March 1, 1920, but did increase as cars reached owners rails, indicates that cars generally were in condition to be used during a period of extreme need.

TABLE B30.—*Statement showing the number of cars in bad order and the percentage in bad order to total cars on line Class I railroads.*

[Compiled by American Railway Association Car Service Division.

	1907		1908		1909		1910		1911	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
January	.....	.....	113,364	5.63	139,362	6.93	115,263	5.73	127,607	5.91
February	.....	.....	132,578	6.57	141,269	7.03	109,313	5.37	127,668	5.90
March	.....	.....	147,458	7.29	146,679	7.26	110,637	5.29	131,457	6.11
April	94,180	5.14	204,679	9.93	153,006	7.59	114,797	5.51	145,365	6.86
May	99,065	5.24	198,652	8.98	166,574	7.91	124,822	5.99	165,508	7.83
June	106,945	5.61	198,545	9.69	158,368	7.73	134,138	6.63	175,341	8.88
July	111,619	5.77	208,558	10.18	161,407	7.91	146,704	6.99	174,232	9.05
August	121,424	6.21	205,216	9.99	158,653	7.89	146,782	7.08	166,796	8.59
September	118,258	6.02	199,234	9.69	150,889	7.40	142,888	6.76	149,711	7.64
October	108,914	5.55	180,871	8.87	134,590	6.59	133,289	6.23	136,037	6.96
November	104,457	5.27	162,774	7.99	119,193	5.75	125,502	5.94	131,918	6.75
December	110,572	5.57	149,014	7.32	111,897	5.58	128,423	5.96	128,438	6.68

	1912		1913		1914		1915[1]		1916	
January	122,874	6.37	138,870	6.49	156,710	6.96	.....	.....	147,362	6.8
February	125,616	6.48	135,814	6.17	174,281	7.76	.....	.....	141,370	6.4
March	117,470	6.11	139,485	6.40	181,073	7.91	.....	.....	128,366	5.9
April	123,615	6.36	146,289	6.58	187,171	8.14	.....	.....	123,772	5.9
May	144,458	7.39	153,333	6.85	192,031	8.35	.....	.....	130,115	6.2
June	153,559	7.79	160,200	7.09	197,159	8.65	.....	.....	137,038	6.3
July	153,470	7.92	162,470	7.40	203,116	8.82	.....	.....	129,272	5.9
August	156,906	7.21	167,111	7.35	.....	.....	.....	.....	145,385	6.7
September	148,670	6.84	159,717	7.04	.....	.....	.....	.....	135,533	6.4
October	139,385	6.36	148,823	6.56	.....	.....	.....	.....	130,953	6.2
November	136,076	6.22	144,280	6.42	.....	.....	.....	.....	115,531	5.9
December	130,651	6.00	154,520	6.92	.....	.....	.....	.....	123,794	5.6

[1] Not available.

Digitized by Google

TABLE B30.—*Statement showing the number of cars in bad order and the percentage in bad order to total cars on line Class I railroads*—Continued.

	1917		1918		1919		1920		1921	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
January	126,515	5.6	128,780	5.7	138,722	5.8	153,995	6.8	191,234	8.5
February	127,266	5.7	127,254	5.5	120,785	5.4	147,999	6.5	213,180	9.4
March	124,998	5.7	124,738	5.3	127,336	5.2	153,727	6.7	243,586	10.7
April	129,831	5.7	127,642	5.3	146,130	6.0	164,660	7.1	279,319	11.8
May	137,279	6.0	126,832	5.3	164,981	6.8	139,786	6.1	309,971	13.5
June	135,010	5.8	149,151	6.0	194,525	7.9	170,493	7.2	341,337	14.8
July	136,251	5.9	172,807	6.8	217,546	8.7	168,589	7.2	354,611	15.4
August	149,760	6.5	175,781	7.0	208,606	8.5	174,371	7.4	376,417	16.3
September	145,738	6.3	158,133	6.6	211,973	8.3	166,148	7.2	374,087	16.2
October	143,417	6.1	145,686	5.8	187,980	7.5	167,965	7.4	364,372	15.8
November	134,510	5.8	135,462	5.6	143,991	6.3	174,276	7.7	345,201	15.0
December	125,957	5.4	131,271	5.4	140,829	6.6	182,097	8.0	320,292	14.0

CAR SERVICE—CONCLUSIONS.

As heretofore stated, the present method of car control is based largely upon the rules of the American Railway Association. Incidental to the enforcement of these rules and to provide ways and means for meeting emergencies, the car service division of the American Railway Association has been established with offices at Washington. This division issues relocation orders providing for the movement of cars to railroads and districts where needed. During 1920 approximately 310,000 box and stock cars were relocated on orders issued by it. Included in this figure are 20,000 box cars moved from the eastern districts to western lines for grain loading and 40,000 coal cars moved from western to eastern territory under service orders issued by the Interstate Commerce Commission. The relocation of cars of all classes by this organization continued during 1920, but owing to the surplus of equipment prevailing since December, 1920, relocation orders have been unnecessary, although the car service division has found it necessary to request certain lines to move cars into grain-producing districts. This movement was accomplished during the past season under the rules of the association and without mandatory orders. It was necessary, however, for the refrigerator department of the car service division to give more or less continuous direction to a considerable movement of refrigerator cars to meet the demands in the producing sections as they arose.

As heretofore indicated, the per diem and car-service rules of the American Railway Association will not in all cases, and especially during periods of heavy demand, result in a prompt return movement of empty cars to originating districts. To meet such emergencies the car-service provisions of the transportation act were enacted, giving jurisdiction to the Interstate Commerce Commission over car service in times of emergency. During 1920, following the return of the railroads to their owners, emergencies arose which required the intervention of the Interstate Commerce Commission. Because of what is commonly termed the "outlaw strike" in April, and other things, the railroads were unable to handle the traffic which was being offered in heavy volume. Severe congestion oc-

Digitized by Google

curred at the ports and along the lines of the carriers, and serious car shortages were reported in the West for agricultural products, in the East for coal and ore, and throughout the country for the loading of various commodities. The severe congestion in various parts of the country caused primarily by the outlaw strike prevented the prompt return to coal-loading districts of the coal cars that had been scattered in the coal strike of 1919. The commission organized terminal committees throughout the country and thus established contact with the shippers and the railroads and with committees established by the railroads in the various sections. Through these committees, aid was given in clearing congestion and in securing the more prompt movement of equipment. In May emergency orders were issued calling for the movement of a large number of empty box cars from the eastern districts to the West, thus providing, by mandatory order, for a movement which should have taken place currently. Owing to the congestion resulting from the outlaw strike and to the unprecedented demand for transportation resulting from the great industrial activity at that time, it became necessary to issue emergency orders covering the supply of cars for the loading of commodities vital to the industrial welfare of the country. Orders were given to supply cars for coal loading for New England points and for the Northwest via the Lakes and for public utilities.

It is decidedly against public interest to permit emergencies of this nature to arise, but it is patent that the provisions of the transportation act, 1920, provide for any emergency of the nature described. More efficient handling of equipment and the construction of additional equipment to the extent required to prevent car shortages will make action by governmental authority unnecessary. Any deficiency of transportation, whether caused by congestion, car shortage, or strikes, constitutes an emergency.

This commission is of the opinion that the public welfare requires the adoption of a comprehensive system for the control of freight-car equipment which will make possible the reduction and the elimination of the waste at present incurred by the unnecessary haul of empty cars and which will prevent the development of emergency conditions. The country needs uninterrupted transportation service. It is all very well to prepare for emergency conditions. It is, however, clearly apparent that with respect to freight-car control and distribution, and the coordination and unification of terminal facilities, the carriers have not progressed. In fact, there is a strong tendency toward reaction in this important matter, and unless prompt and adequate action is taken, emergency conditions with all of the attendant harassments to business will certainly result.

It is a well-known fact that the railroads which are financially strong, as a rule own and properly maintain sufficient equipment adequately to serve shippers dependent upon them for such service. Other lines, however, either because of financial difficulties or for other reasons, are unable to meet the reasonable demands of shippers whom they are obligated to serve. Such a condition may have resulted in more rapid development of the territory served by the stronger road because of the more dependable transportation service.

If we are to aid in the development of the country as a whole, the service rendered by each line of transportation, in so far as adequate car supply is concerned, must be placed upon the same basis. It will

Digitized by Google

not do to take cars away from stronger lines and turn them over to weaker lines, thus depriving shippers served by the stronger lines of the service which they could reasonably expect for the benefit of less fortunate shippers served by the weaker lines. We have here a problem which must be considered in its nation-wide application. Some plan should be devised which will aid the weaker lines by enabling them to purchase and properly maintain sufficient equipment to supply the present reasonable needs of shippers, together with a margin to meet a normal development of business activity. The recapture clause of section 15–A was designed to furnish the financing necessary to equip the weaker roads with cars, but up to this time nothing has been paid into the fund contemplated under the recapture provision.

As has been indicated, under the present system the weaker lines will hold and use cars received from other lines as long as they need them. Such action frequently results in a shortage of cars along the lines of the railroads owning the equipment. To meet such a situation, the car service division of the American Railway Association is empowered to order relocation of equipment as between railroads.

This organization formed by the voluntary action of the carriers is not equipped to prevent emergency conditions. Its organization is not sufficiently extensive to enable it to keep closely in touch with conditions throughout the country. It therefore does not order a relocation of cars until a car shortage has developed along the lines of a particular railroad. Any plan which may be adopted for the handling of equipment must contemplate the current relocation of empty cars. It will not do to permit a railroad or a district to become short of equipment before steps are taken to meet the situation. It might be that the only effective plan will be the pooling of equipment under a central control having sufficient power to require railroads to immediately execute any orders given.

As we have indicated, under the present rules of the American Railway Association, there is an enormous waste caused by the excessive movement of empty cars. It is also a fact that car shortages have in the past occurred each year, the severity of the shortage being measured only by the amount of traffic being handled generally. It would seem impossible to intelligently handle the car distribution of the country without current information as to the flow of traffic throughout the country. One plan has been suggested which contemplates the subdivision of the railroad mileage into districts of comparatively small extent, each division thus formed to include, so far as possible, distinct producing territories but not necessarily to include all lines of any particular railroad. The points of contact with other districts would be fixed at railroad division terminals or at junction points, each district placed in charge of a supervisory officer who would secure daily passing reports from each point of contact with the adjoining districts. These reports would indicate the volume of loaded and empty cars moving in each direction, classified as to type of car. This plan would make possible a daily balanced movement and the fuller utilization of power. Heavy loaded movements in one direction could, where desirable, be instantly met with a movement of empty cars in the opposite direc-

Digitized by Google

tion. Whatever plan is adopted must be based upon the premise that each individual shipper, each group of shippers, and each of the several producing or originating districts throughout the country must be fully supplied with freight equipment at all times. Shippers in one section of the country should not be wholly dependent upon the voluntary action of railroad officers in another section of the country who are only concerned with the requirements of shippers in the district served by them and who may hold and use cars belonging to other railroads serving other districts.

TRAIN AND YARD SERVICE.

Tables B32, B33, B34, B35, and charts B11 and B12 show the locomotive, freight, and passenger train-miles, gross ton and net ton-miles, revenue ton-miles, revenue passenger-miles, net tons per train, and passengers per train, with increases or decreases annually, and indexed to 1911 or 1913.

We have heretofore called attention to the increase in the tractive power of locomotives. We shall now indicate its effect upon train operation. In 1911 the average tractive power per locomotive was 28,305 pounds; in 1920 it had increased to 36,313 pounds. The total freight locomotive mileage in 1911 was 694,054,825. In 1920 it was 690,808,212, a decrease of 0.5 per cent, while during the same period there was an increase of 52.8 per cent in gross ton-miles and 62.4 per cent in net ton-miles. Included in the figures covering the total freight locomotive mileage just quoted is a considerable proportion of light locomotive mileage, and although the figures are not available for 1920, it is of interest to note that there has been a considerable increase in this item, the figures for 1915 being 28,318,308 and for 1919, 33,033,005; the figures in 1917 reached 37,051,731. Passenger locomotive mileage shows some increase, there being 569,292,711 miles in 1911 and 572,852,229 miles in 1920. This is controlled by the number of passenger trains operated. The peak was reached in 1917 with 585,734,762. During the war year 1918 this was reduced to 538,653,099. This indicates that prewar passenger schedules had not been entirely restored during 1920. The amount of coal consumed by locomotives is given in Table B36. Fuel consumed in freight service during the 11 months ending November 30, 1921, was 182 pounds per 1,000 gross ton-miles, compared with 194 pounds for the 11-month period ending November 30, 1920. The average cost per ton for the past several years is as follows: 1916, $1.89; 1917, $2.62; 1918, $3.37; 1919, $3.57; 1920, $4.44.

TABLE B36.—*Fuel consumption and cost—Class I railroads.*

Year.	Bituminous.	Anthracite.	Fuel oil.	Total.	Cost.
	Net tons.	*Net tons.*	*Gallons.*	*Net tons.*	
1915	106,155,326	4,937,965	1,256,358,400	119,098,861	.....
1916	116,582,146	5,359,786	1,631,930,281	132,363,789	$250,544,862
1917	133,421,457	5,293,301	1,804,889,338	150,230,647	393,929,538
1918	134,214,480	3,615,697	1,639,956,963	148,122,435	500,225,205
1919	119,692,067	2,981,959	1,586,061,174	132,620,935	474,174,792
1920	138,622,000	.....	1,908,632,000	151,364,288	672,891,964

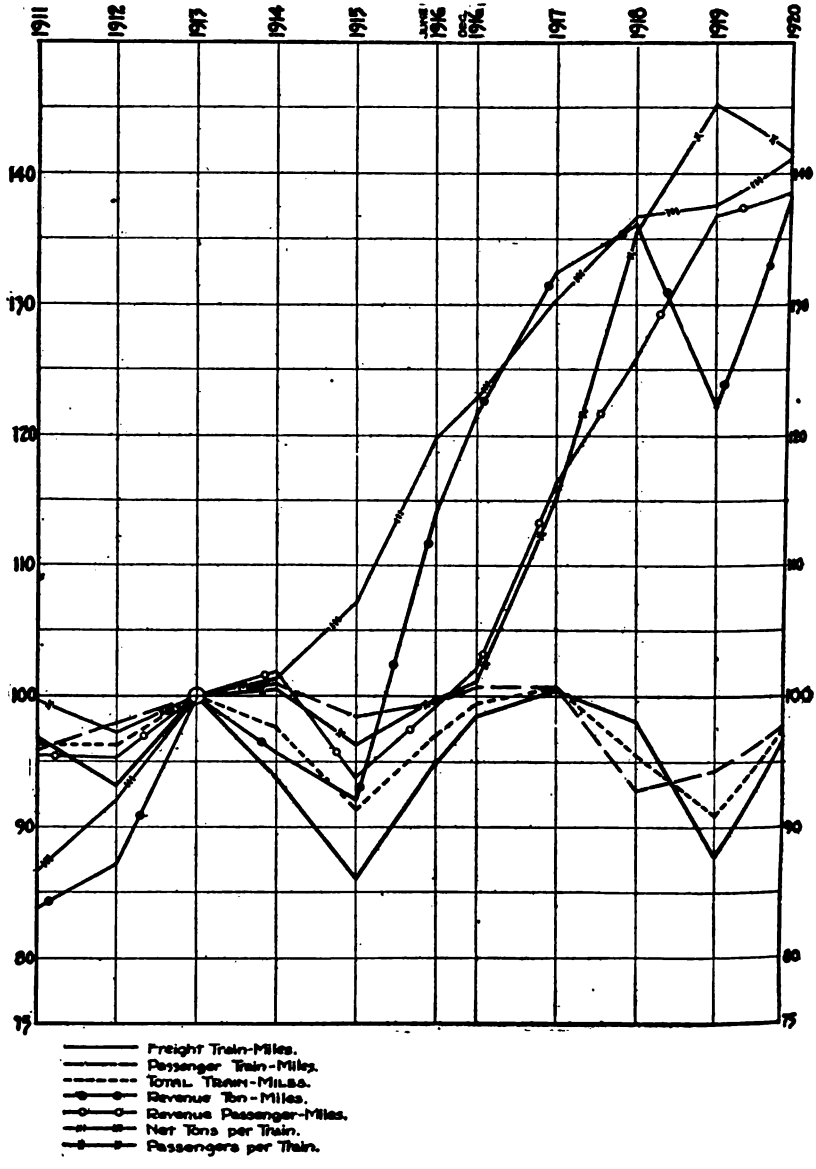
Digitized by Google

TRAIN-MILES.

The train-mile is considered the best measure of operating efficiency and the cost of transportation. As has been stated, railroad man-

Chart B 11.

OPERATION, STEAM RAILROADS—TRAIN SERVICE, CLASS I RAILROADS (1913=100 PER CENT).



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

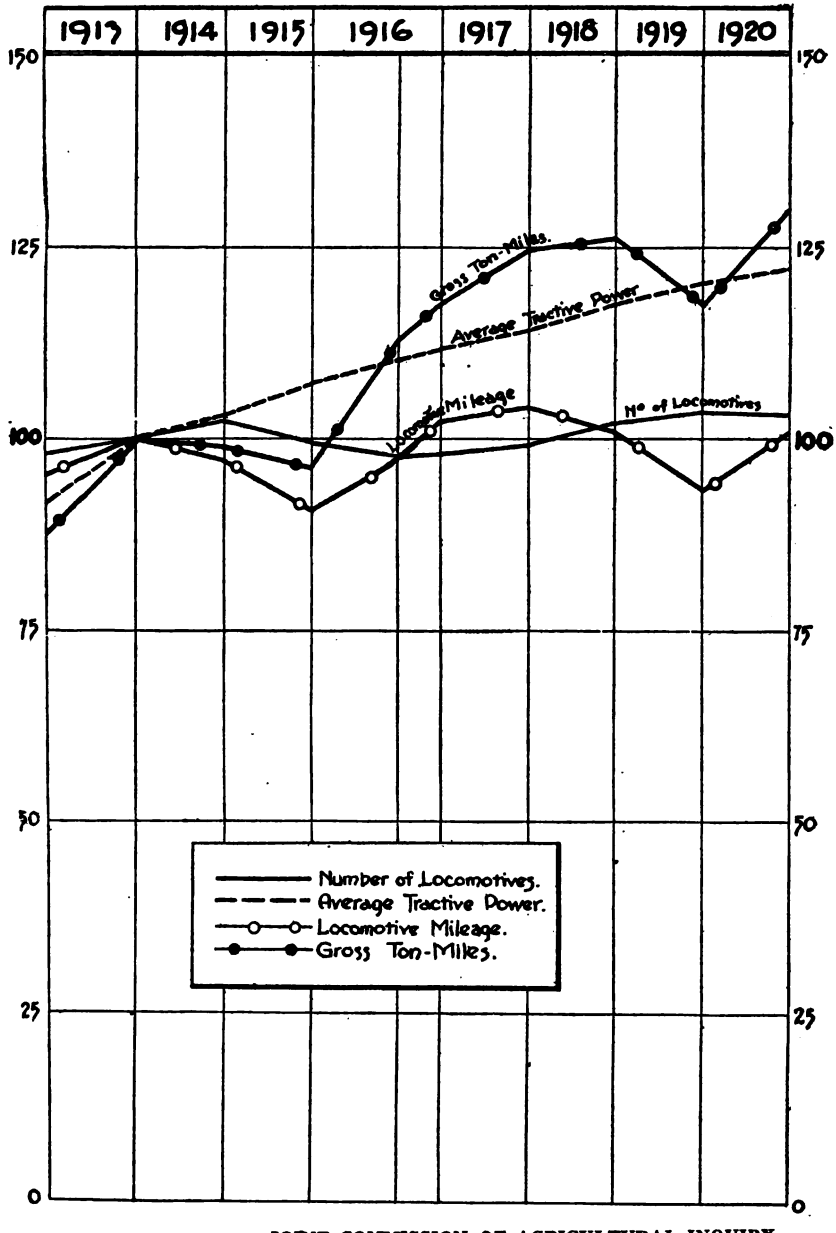
agers have attempted, and properly, it will appear, to increase train loading and thereby reduce the number of train-miles necessary to

Digitized by Google

transport a given tonnage. The figures indicate that the freight train-miles in 1911 was 608,678,284; in 1920 it was 607,508,112, a

Chart B 12.

OPERATION, STEAM RAILROADS—LOCOMOTIVE PERFORMANCE, CLASS I RAILROADS (1913=100).



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

decrease of 0.2 per cent. This is another way of indicating the increased tractive power of locomotives, with the added factors of

more careful supervision, involving more careful train loading on the part of divison officers.

Passenger train mileage shows an increase of 2.2 per cent in 1920 over 1911. The explanation given under passenger locomotive-miles covers this feature. Special passenger train mileage shows a decrease in 1920 of 51.4 per cent under 1911. The total transportation service train-mileage shows a decrease of 0.8 per cent in 1920 over 1911; and when it is considered that the gross ton-mileage in 1920 increased 52.8 per cent over 1911 the achievement of the railroads during the years indicated, in spite of the difficulties of war conditions, is worthy of note. While the handling of a greatly increased tonnage as reflected in the gross ton-mile figures by a decreased number of train-miles indicates improving efficiency, it does not tell the entire story. The net ton-miles handled in 1920 exceeded the net ton-miles handled in 1911 by 62.4 per cent. A ratio even greater than in the gross ton-miles.

REVENUE TON-MILES PER FREIGHT TRAIN-MILE.

The revenue ton-miles per freight train-mile is a measure of operating efficiency which may be affected by several factors, among them the average tractive capacity of locomotives, the average capacity of freight cars in service, and the loading per car.

Below are shown in parallel columns for the years 1911 to 1920, both inclusive, the train tonnage and average tractive capacity of locomotives for the 10-year period:

Year.	Train tonnage.	Average tractive capacity of locomotives.	Year.	Train tonnage.	Average tractive capacity of locomotives.
1911	396	28,305	1916	565	33,188
1912	421	28,987	1917	602	33,932
1913	457	29,966	1918	634	34,995
1914	464	30,705	1919	637	35,780
1915	488	31,840	1920	652	36,313

Comparing 1920 and 1911, the tonnage per train increased from 396 to 652, or 64.6 per cent, while the average tractive capacity increased in the same period 27.5 per cent. Comparing a more recent spread, between 1920 and 1916, it will be noted that the tons per train have increased at the rate of 15.4 per cent, while the average tractive capacity has increased 9.4 per cent. There has therefore been continued and consistent improvement in operation by better use of available motive power.

Increased capacity loading of freight cars has been instrumental in increasing train tonnage in greater proportion than the increased tractive capacity of locomotives. In 1912 the average capacity of freight cars was 37.5 tons, and in 1920, 42.2, an increase of 14 per cent; the loading in 1912 averaged 22.8 tons per car and in 1920, 28.5 tons per car, an increase of 25 per cent; the average weight capacity of the car utilized in 1912 was 61.6 per cent, and in 1920, 67.5 per cent. These factors have served to decrease the proportion of dead-weight load per train. In accomplishing this result the cooperation of the shippers in heavier loading of cars has been a considerable factor.

Digitized by Google

Figures are available as to tons per train by months since January, 1918. The accompanying statements show monthly averages from January, 1918, to September, 1921, inclusive. These figures are on a slightly different basis than those first quoted above in that in this compilation no separation between revenue and nonrevenue ton-miles is practical, and slightly heavier train tonnage is therefore indicated. The period of highest trainload was reached from June to November, inclusive, 1920, with a maximum of 788 tons in August, compared with an average of 704 for the 12 months ended September, 1920.

Since November, 1920, there has been a drop in train tonnage from the peak attained during the business activity of the earlier months of that year. This has resulted primarily from decreased loading per car, although an important factor is the change in the volume of various commodities transported. For example, the decrease in the movement of coal and ore in proportion to total tonnage handled has the effect of reducing trainload. The following table gives the net tons per train by months, 1918 to 1921, inclusive:

	1921	1920	1919	1918
January	617	653	625	569
February	617	675	625	618
March	627	703	658	666
April	638	647	674	685
May	674	725	708	661
June	671	736	715	698
July	660	746	724	710
August	671	763	740	737
September	679	747	748	735
October	702	737	722	720
November	633	691	653	686
December	609	657	638	666
Total	651	708	686	679

TARE TONNAGE.

Table B29 and chart B13 show the increase in the average weight of the freight car, the net tons per loaded car, the ratio of empty to loaded car-miles, the average haul per ton, Class I railroads, considered as a single system; the ratio of tare ton-miles to net ton-miles, and the ratio of tare ton-miles, plus nonrevenue ton-miles, to revenue ton-miles. This discloses a rather remarkable condition. It indicates, for instance, that in 1912 the railroads handled 139.4 nonrevenue and tare ton-miles for each 100 revenue ton-miles. In 1915 this reached 146.1, in 1920 it was 122.8, and in 1921, 147.6. It reached its lowest mark in recent years in 1918, when it was 118.2.

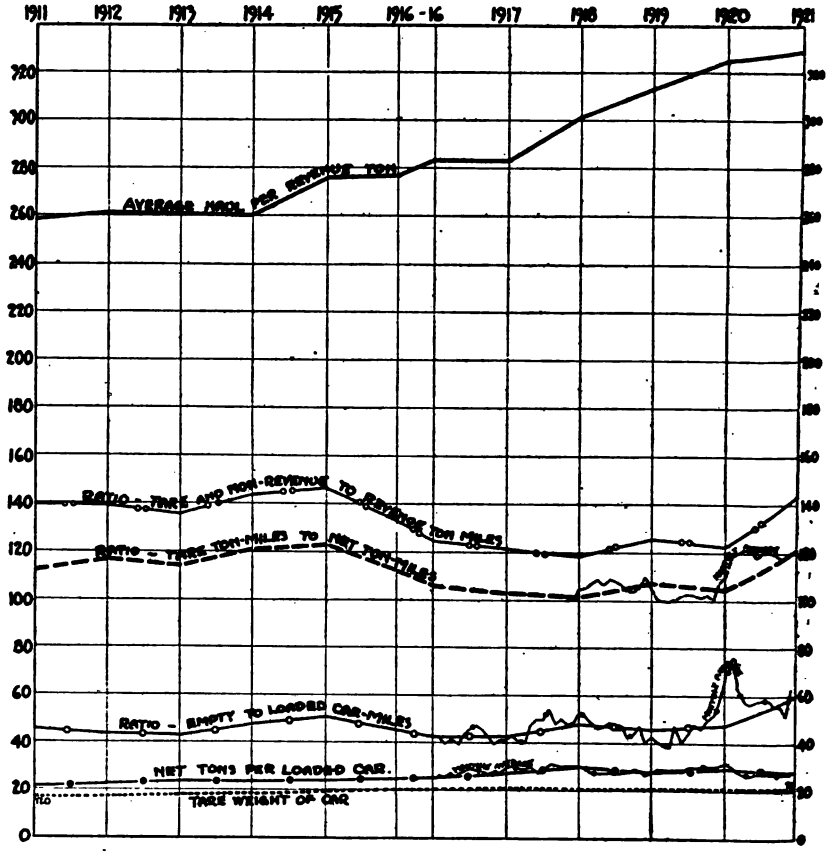
It would seem better, however, to discuss this particular matter by eliminating further consideration of nonrevenue or company freight, which must be handled as a matter of necessity. We shall, therefore, turn our attention to the ratio of tare ton-miles to net ton-miles. There are three controlling factors: First, the weight of the empty car, which is shown increased from 17 tons in 1911 to 21 tons in 1921; second, the haul of the empty car; and third, the weight of the net carload. The ratio of tare ton-miles to net ton-miles is influenced to a remarkable degree by the net weight of the carload, which, as the chart indicates, shows a gradual increase from 1911 to 1918, and a remarkable increase from 1916 to 1920, with some decrease in 1921. An excessive movement of empty cars, such as occurred during

Digitized by Google

1921, to a very large extent offsets the favorable showing made in the average net weight of the carload, for here we have the curve of the ratio of tare ton-miles to net ton-miles reaching its peak at a time when the empty-car mileage was also higher than at any previous period since 1908, and the net load of the car had decreased but slightly.

Chart B 13.

OPERATION, STEAM RAILROADS—NONPRODUCTIVE TON-MILES, 1911–1921.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

The effect of empty car-miles upon the nonproductive ton-miles is further indicated by a comparison of the performance of 1921 with the year 1919. In each of these years the net load per car was 27.6 tons. The ratio of empty to loaded car-miles in 1919 was 45.6; in 1921, 58.7. The ratio of tare ton-miles to net ton-miles in 1919 was 107.6; in 1921 it was 120.6. It will also be noted that in 1915 the net load per car was 23.4 tons and in 1913 was 23.3 tons. The ratio of empty to loaded car-miles in 1915 was 50.7 and in 1913 was 42.7. The ratio of tare ton-miles to net ton-miles in 1915 was 122.6 and in 1913 was 113.9.

Table B31 shows the number of "home" cars on "home" roads by months and years 1907 to 1921, inclusive. The mean percentage of

Digitized by Google

"home" cars on "home" roads to total owned for each year shown follows:

1907	58.5	1914	64.9
1908	73.7	1916	50.2
1909	68.0	1917	50.2
1910	58.0	1918	33.0
1911	62.6	1919	28.5
1912	53.8	1920	26.7
1913	55.4	1921	67.8

It will thus be seen that the number of cars "home" in 1921 was higher than in any recent year except 1908. As in 1908 and in other years this homeward movement of cars was to a considerable extent accomplished by an empty haul. This is indicated by the following comparison of the performance for the calendar year 1921 with the fiscal year ending June 30, 1913:

Month.	Per cent "home" cars "home."		Ratio empty to loaded car-miles.	
	1913	1921	1913	1921
January	51.0	45.2	45.9	73.9
February	52.0	64.1	42.6	63.6
March	53.0	68.4	42.8	57.9
April	54.0	71.8	44.0	56.5
May	56.0	72.8	45.5	57.5
June	58.0	73.1	44.9	58.0

Month.	Per cent "home" cars "home."		Ratio empty to loaded car-miles.	
	1912	1921	1912	1921
July	58.0	74.0	44.9	58.0
August	56.0	71.6	42.6	55.5
September	53.0	70.0	37.1	55.4
October	50.0	66.0	36.9	51.1
November	48.0	64.1	38.7	63.0
December	48.0	72.6	42.2	60.0

Disregarding all arbitrary relocations of empty cars it will be found that the special types of freight equipment are hauled empty to a greater extent than box cars. Coal cars, stock cars, flat cars, and refrigerator cars can not be given return loading to the principal originating districts to the same extent as box cars which are used largely for general purposes.

The loading of the various classes of traffic in the calendar years 1920 and 1921 shows a considerable change when compared with the fiscal year 1913, these changes being as follows:

	Per cent of total.			Per cent increase (+) or decrease (−).
	1913	1920	1921	
Products of agriculture	9.6	8.9	12.3	+26.1
Products of animals	2.4	2.1	2.5	+19.0
Products of mines	55.4	56.8	54.3	− 4.4
Products of forests	8.8	8.0	8.1	+ 1.2
Manufactures and miscellaneous	19.9	20.0	18.3	− 8.5
Merchandise and L. C. L.	3.9	4.2	4.4	+ 4.7
Total	100	100	100	

Digitized by Google

It will thus be seen that the decreases in 1921 were heaviest in those commodities ordinarily requiring a special type of car. While the increase in products of the farm was considerable, this class of traffic is ordinarily loaded in box cars, which may be given return loading.

Table B28 shows the loaded and empty car-miles for 1911 to 1920, inclusive. Table B37 shows the loaded and empty car-miles by direction on typical railroads in the western, eastern, and southern districts by months for the years 1920 and 1921. This study indicates that in 1921, with a lighter volume of loaded traffic moving westbound, there was a heavier eastbound movement of empty cars, and although there was a lighter volume of loaded traffic moving eastbound, the sum of the loaded and empty westbound mileage exceeded the loaded eastbound car mileage. In some months and, in fact, on certain railroads for the entire year the sum of the loaded and empty westbound car mileage exceeded the sum of the loaded and empty eastbound mileage.

Under the car-service rules of the American Railway Association, cars foreign to the owning line may be returned to the owning line if a direct connection, either loaded or empty, or may be returned empty to the road from which received if that road is also a direct connection of the owning line. If the owning line is not a direct connection of the line holding the car and it can not be loaded to the owning line, the car must be delivered to the road from which originally received.

This results in a long, circuitous haul of the empty car occurring more frequently when traffic is light but under the rules may occur at any time.

The railroads of the Great Lakes region, being large intermediate lines, afford the following concrete example of the increase in empty-car miles in 1921, compared with 1920:

Great Lakes region.

	Car miles.		Per cent increase (+) or decrease (−).
	1920	1921	
Eastbound loaded	1,677,558,000	1,431,421,000	−14.6
Eastbound empty	253,089,000	333,256,000	+31.6
Eastbound total	1,930,647,000	1,764,677,000	.....
Westbound loaded	1,006,535,000	798,207,000	−20.6
Westbound empty	963,106,000	959,426,000	− .3
Westbound total	1,969,641,000	1,757,633,000	.....
Total loaded	2,684,093,000	2,229,628,000	−17
Total empty	1,216,195,000	1,292,682,000	+ 6.28

It will be noted that the total empty-car miles in 1921 exceeded the total in 1920 by 76,487,000 miles, or 6.28 per cent. There was a decrease of 0.3 per cent in the westbound-empty miles but an increase of 80,167,000 miles, or 31.6 per cent, in the eastbound-empty movement. Had the sum of the westbound-loaded and westbound-empty car-miles only equaled the eastbound-loaded movement, 326,212,000

Digitized by Google

westbound-empty car-miles would have been saved. The excess eastbound-empty car-mileage is probably wasted effort.

Chart B13 also gives the average haul per ton for Class I roads treated as a single system. While this factor should influence the tare and net ton-miles equally, its influence upon the empty-car mileage is not apparent. This study indicates very clearly that one of the important matters to be considered in the operation of the railroads to-day is the decrease of the tare or nonproductive ton-mile in its relation to the productive ton-mile. This can be accomplished by (*a*) a reduction in the empty-car miles, (*b*) an increase in the net load.

A decrease in the empty-car miles may be brought about by increased efficiency in the loading and movement of freight equipment. Cars should never be handled empty simply to get them back to owner's rails, nor should they be back hauled for loading to owner's rails when other suitable equipment is available at the loading point, nor should empty cars be hauled over long and circuitous routes to the originating district.

Tables B29 and B38 show the average net tons of freight per loaded car for 1909 to 1921, inclusive, and a comparison of the loading by commodities, with the average per car for certain periods in 1920 and in 1921. Chart B14 gives a comparison of the third quarter of 1921 with the same period of 1920. The loading of the car is influenced largely by trade conditions and by tariff minimum. The tendency of the latter has been upward, especially beginning in 1916. While from an operating point of view it is desirable to gradually increase the minimum weights, excessive minimum weights work to the disadvantage of the small shipper and tend to induce purchases in larger quantities than can be readily disposed of and thus slow up merchandise turnover.

Not until within the past five years has any concerted action been taken with respect to increasing the load per car, and not until recent months has complete data been compiled to show the average loading per car separated by commodities handled.

The following table will show for 1912 to 1920, inclusive: (1) The average capacity of freight cars in tons; (2) loading in tons; (3) the percentage of weight capacity to which cars have been used, all based on yearly averages.

Year.	Average capacity.	Loading per car.	Per cent of weight capacity used.
June 30—			
1912	37.0	22.2	60.6
1913	38.0	23.3	61.3
1914	39.0	23.2	59.5
1915	40.0	23.4	58.5
December 31—			
1916	41.0	25.0	61.0
1917	41.5	27.0	65.1
1918	41.6	29.3	70.4
1919	41.9	27.6	65.9
1920	42.2	29.6	70.1

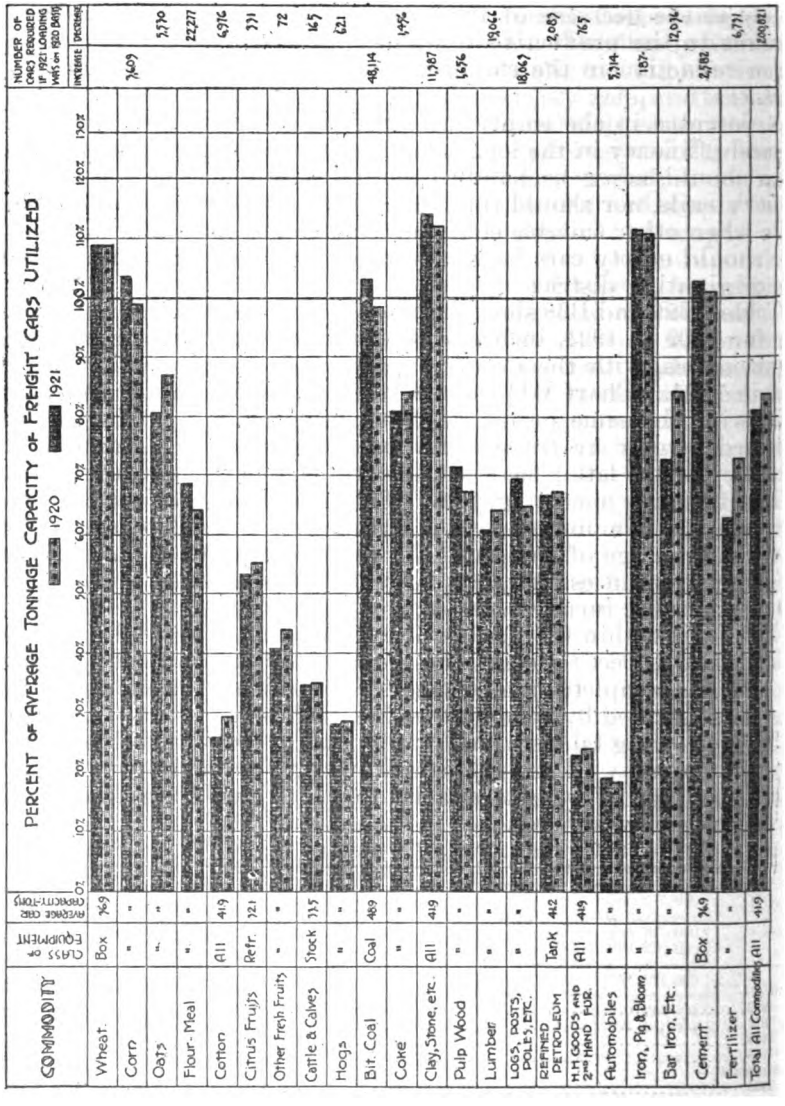
With increasing demand for equipment coincident with the war period, with inability of the railroads by reason of war conditions to

Digitized by Google

obtain additional equipment, and with the necessity for conserving of resources, campaigns for heavier loading of cars were consistently pursued, with the results shown in the above table.

Chart B 14.

COMMODITY LOADING—THIRD QUARTER ENDING SEPTEMBER 30, 1921.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Carload minimums are fixed by tariff. Not infrequently, however, the minimum is based on an established trade unit rather than the weight limit to which it is possible to load a car with a particular commodity. Salt and flour, for example, can be loaded to practically

Digitized by Google

the weight-carrying capacity of the car, yet the tariff minimums permit loading which is markedly less than the carrying capacity. The Food Administration fixed carload minimums for practically all grain products and foodstuffs. These minimums, however, became ineffective with the passing of the authority of the Food Administration, and there was a return to the earlier minimums, except in certain cases of revision.

The average loading per car varies inversely with car supply. As increasing difficulty is found in meeting demands for cars the shipper more readily accepts the principle of conserving equipment, and is generally quick to respond to suggestion of the carriers. As car surpluses developed, the need for this conservation is not as apparent, and while the shipper wishes to respond to the appeal of the carrier in this respect, there is not the same appreciation of responsibility on his part as when cars are scarce. Much good has been done by organized campaigns through trade organizations in increasing car loading, and it is to be said to the great credit of the shipper that generally he has been quick to respond whole-heartedly.

The average load per car for 1921 was 27.6 tons. For 1920 it was 29.6 tons. Comparing these periods, it may be said that grains and the products of mines and forests maintained as a whole as good an average in 1921 as in 1920, while fruits, vegetables, products of animals, manufactures, and miscellaneous products show a decreased loading per car. To put this another way, the producer of certain raw materials, including coal, ore, and lumber, continued to load cars as heavily as during the previous year, and even improve in some instances, while the shipments of manufactured products, fruits and vegetables, and flour show markedly less loading per car. A few records of car loading taken at random from reports of the third quarter, ended September 30, 1921, are as follows:

	1921		1920	
	Cars loaded.	Tons per car.	Cars loaded.	Tons per car.
Flour and meal	121,495	25.4	84,203	31.2
Citrus fruits	12,272	17.2	11,668	17.8
Other fresh fruits	130,283	13.2	143,997	14.1
Cotton	60,164	11.1	37,336	12.6
Salt	31,507	26.0	32,360	32.3
Bar and sheet iron	88,786	30.7	210,031	35.6
Castings, machinery	47,040	20.4	112,000	22.8
Sewer pipe	29,860	18.5	31,761	20.2

For November, 1921, the average loading per car was 27.1 tons, while in 1920 it was 30.3. It may be stated that gain or loss of loading of 1 ton per car represents a difference of 80,000 freight cars in transportation service daily. Thus for the month of November the loss in loading of 3 tons per car, comparing 1921 with 1920, was equivalent to increasing the number of cars in transportation service by 240,000 more than would have been required had the loading per car in 1921 been maintained on the 1920 basis. Not only does increased car loading augment the supply of available cars, but, what is more important, it reduced the proportion of nonproductive or tare ton-miles. This is clearly indicated in chart B13.

Digitized by Google

In 1910 the average net tons of freight per loaded car was 21.2; in 1920 it was 29.6; in 1921 it was 27.6. The highest point reached was in December, 1920, when the average reached 31.2 tons; this figure, however, was brought about by a continued heavy loading of coal and other heavy commodities and a decrease in the general business of the country.

As shown in Table B38, the average loading in the first, second, and third quarters of 1921 ranged from 33.4 tons per car to 34.2 tons. This, however, included only carloads, less than carloads being excluded. With an average loading of carload freight, as indicated, it would seem that the grand average for the year should approximate 34.2. The average of all loading however, was only 27.6 tons, indicating that less than carload freight is loaded very light. It is realized that capacity loading can not in all cases be given to such miscellaneous freight as is handled in the less than carload lots, but there is opportunity for improvement.

YARD SERVICE.

The movement of cars through terminals and yards when in transit or from loading tracks within a terminal to trains for outbound movement and from arriving trains to unloading tracks is of considerable importance. As has been shown, the carriers realize the necessity for additional yard and terminal tracks and have devoted their attention to extension of terminal facilities rather than to extension of new line.

The yard switching locomotive mileage of 274,842,775 miles in 1915 increased to 356,946,765 miles in 1920, or 29.8 per cent. It is significant that the yard freight-switching locomotive mileage is one-half as great as the total freight locomotive road mileage. This reflects the importance of yard-switching as a factor in railroad operation, and when it is considered that this does not include the switching performed by road trains, which in 1915 equaled 39,937,157 locomotive miles, and had increased to 51,073,297 miles in 1920, the importance of the entire subject will be apparent. The service rendered in the spotting and switching of cars is necessary, and its importance should not be underestimated. The American railways in this respect are unique. Here, the service of transportation includes the placing of the empty car and its movement from the loading track of the industry to the train, and thence to its destination; arriving at destination, it includes the movement of the car from the train to the unloading track and the removal of the empty car from the unloading track to the yard for further service. In England, for example, transportation service and rates include only the movement in the train between the originating point and the point of destination, a separate charge being made for switching at both ends, and all switching operation being considered a separate transaction. The freight rates on American railroads, however, are predicated upon the movement of the goods from the loading to the unloading point, no matter how or where situated.

In almost all cases the terminals occupy valuable land. Though the expense of their operation is heavy, the necessity of the service from a public standpoint is equally great.

Digitized by Google

During the period of Federal control progress was made toward the unification of terminal operation. Since March 1, 1920, these unifications have been in large part abandoned. Many railroads do not desire to join with other railroads in the common use of terminals and their joint operation, feeling that they will thereby lose some of their competitive advantages. It is a fact, however, that where consolidations have been made large sums of money are saved annually in operating expenses, with the added advantage of making possible the handling of a larger volume of traffic without additional expenditures for new tracks and other facilities. The transportation act of 1920 contemplated the unification and joint operation of terminals wherever possible. This commission believes that the carriers should carry out the spirit of the law and effect these consolidations in terminal operation wherever possible, and recommends that the Interstate Commerce Commission investigate and point out to the carriers such consolidations as may be feasible.

ACCUMULATIONS OF FREIGHT.

Table B39 and chart B15 reflect the accumulations of freight in cars throughout the country for 1917 to 1921, inclusive. The congestion following the strike of April, 1920, is clearly indicated. Accumulations of freight are not due in all cases, however, to the inability of the railroads to handle the traffic. In many cases the shippers or consignees are responsible. Failure of consignee to unload promptly is one of the important causes of congestion and frequently leads to the issuance of embargoes by the carriers to prevent further accumulations until the congestion has been removed. Upon the shipper and the consignee rests the responsibility for promptly releasing equipment. Demurrage charges are calculated to induce prompt release of cars by shippers, but in many cases shippers prefer to pay demurrage rather than go to the expense and trouble of finding a place for the removal of the goods. The cooperation of shippers with the carriers in this respect will result in great benefit to both.

TABLE B39.—*Statement showing the accumulation of cars loaded with freight being held for various causes at the principal terminals and yards on Class I railroads.*

[Compiled by American Railway Association, Car Service Division.]

Week ending—	1921	1920	1919	1918	1917
Jan. 8	23,684	75,586	46,828	149,134	.....
15	26,379	70,019	38,288	204,518	.....
22	28,996	105,847	36,765	186,031	.....
29	26,549	119,927	34,486	195,117	.....
Feb. 5	27,007	117,276	29,738	206,234	.....
12	26,387	122,962	26,951	156,579	.....
19	28,694	122,022	26,416	154,113	.....
26	30,111	103,237	28,574	143,469	.....
Mar. 5	23,773	109,695	32,102	131,682	.....
12	23,163	101,265	31,720	125,949	.....
19	21,550	90,397	31,396	125,378	.....
26	18,542	84,059	33,404	107,337	.....
Apr. 2	17,901	93,019	32,190	97,380	.....
9	15,002	157,484	30,716	94,522	109,467
16	14,824	288,152	28,752	89,129	104,775
23	14,851	269,069	27,219	85,279	89,234
30	12,323	235,770	24,185	82,560	93,788
May 7	12,194	201,393	21,869	74,913	85,663
14	11,057	184,987	22,417	68,965	76,975
21	11,632	166,084	20,907	64,269	78,102
28	11,023	159,209	20,703	60,006	71,929

Digitized by Google

TABLE B39.—*Statement showing the accumulation of cars loaded with freight being held for various causes at the principal terminals and yards on Class I railroads*—Continued.

Week ending—	1921	1920	1919	1918	1917
June 4	12,680	125,606	24,507	55,059	77,530
11	11,748	116,962	26,620	55,706	83,222
18	13,260	106,107	28,357	46,171	78,626
25	13,475	121,529	25,447	45,446	75,354
July 2	10,915	129,278	23,384	39,330	70,819
9	14,688	109,675	24,979	39,923	64,538
16	13,260	92,700	24,569	37,376	58,302
23	13,693	85,839	25,068	34,189	65,749
30	16,976	90,571	26,162	29,395	71,060
Aug. 6	17,796	84,949	55,039	35,572	67,304
13	16,312	79,213	67,178	37,997	66,291
20	16,259	74,945	37,001	38,071	62,092
27	13,855	70,455	35,677	35,327	66,572
Sept. 3	13,506	64,060	39,186	37,306	70,292
10	13,747	50,737	44,592	33,217	69,413
17	12,719	47,438	42,859	33,509	65,894
24	11,863	47,689	47,487	35,810	66,539
Oct. 1	14,211	45,758	49,679	34,423	66,993
8	13,456	41,135	50,345	39,632	68,949
15	14,729	43,616	52,715	41,481	73,791
22	12,402	39,807	53,242	41,935	73,968
29	13,198	40,040	62,984	40,144	71,574
Nov. 5	16,617	30,835	98,132	39,330	73,491
12	16,210	29,199	82,145	43,248	78,748
19	15,042	28,624	81,986	39,420	90,136
26	16,372	26,324	73,308	38,276	102,312
Dec. 3	13,811	21,991	77,930	38,690	108,449
10	12,258	27,047	75,011	39,626	145,089
17	11,371	28,830	72,867	46,537	136,641
24	10,243	27,212	75,717	44,737	128,504
31	11,523	23,009	74,347	46,890	144,539

HUMAN ELEMENT.

Economical and efficient operation of the railroads is dependent largely upon the human element. By the very nature of its activities personal supervision can not be given by the officers to each detail of operation. Responsibilities must be delegated to the men. During 1920 for each $10,000 of investment in railroad operating property there was 1 employee, while the number of persons engaged in agriculture was 1.2 per $10,000 of investment. If every duty and responsibility resting upon the railroad officer and employee is properly and fully met, the result is better service to the public, which in the final analysis should be the aim of those engaged in this important industry.

REVENUE TRAFFIC.

Revenue ton mileage in 1911 was 249,843,166,302, and in 1920 it was 410,306,206,802, an increase of 64.2 per cent. Freight revenue in 1911 was $1,856,504,287, and in 1920 was $4,317,608,483, an increase of 132.6 per cent. There was originated on the lines of carriers during 1920 a total of 1,256,379,734 tons of freight. There was transported during 1920, including both freight originated and that received from connecting lines, 2,259,983,275 tons. The proportion of the amount of freight received from connecting lines to the total amount handled was 44 per cent in 1911, and also in 1920.

TONNAGE IN TRANSIT.

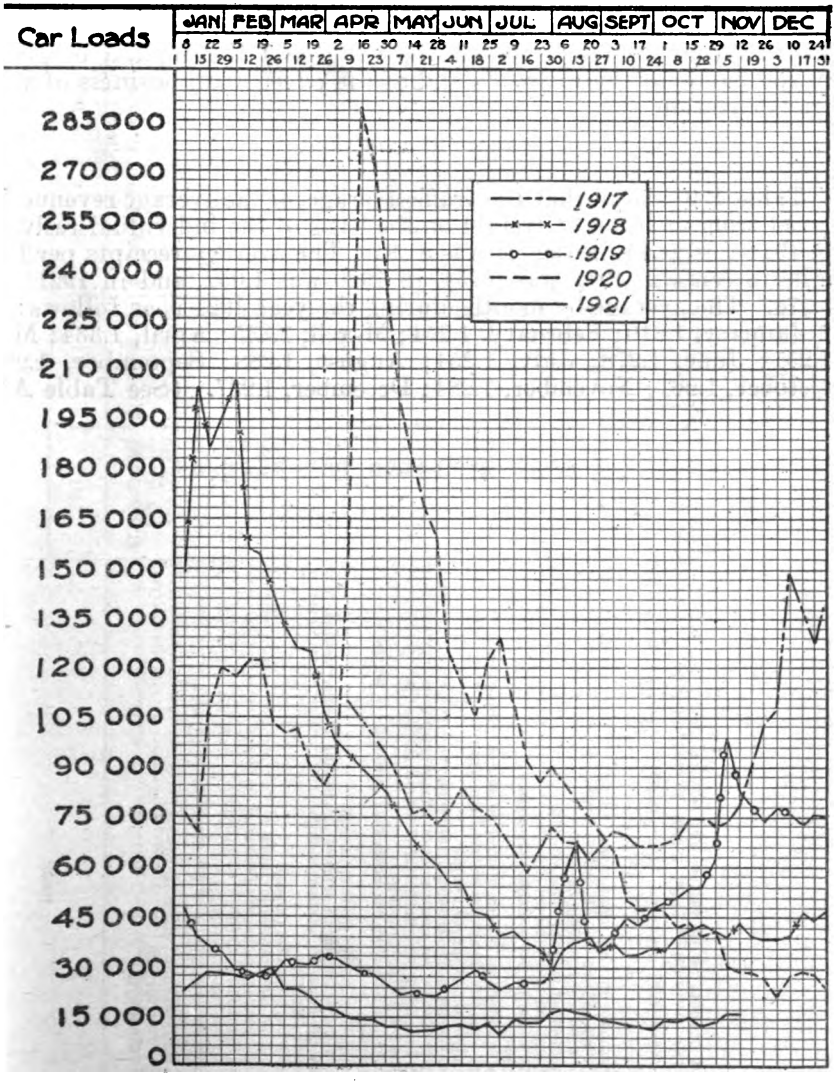
The average haul per ton, Class I railroads treated as a system, shows a remarkable increase from 258.8 miles in 1911 to 394.9 miles

Digitized by Google

in 1920, and 326.2 in 1921. One explanation appears to be that we are now distributing our commodities on a nation-wide basis. It is also true that motor-truck transportation is taking a considerable portion of the short-haul traffic formerly handled by steam railroads.

Chart B 15.

SUMMARY OF FREIGHT ACCUMULATIONS, ALL DISTRICTS, 1917–1921.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

An interesting sidelight on this feature is seen in the following: king the tons originated on the railroads in 1920, 1,256,379,734, and riding by the working days in the year, or 305, we have 4,119,277

Digitized by Google

tons originated daily. Multiplying this by the average days in transit, or 5, we have 20,596,385 tons constantly in transit. Based on an average value of all commodities of $73 per ton, which prevailed under the prices of 1920, we find the value of all commodities constantly in transit to be $1,503,536,105. The interest at 6 per cent on this amount equals $90,212,166 annually. If the average time in transit were reduced one day it would reduce the interest charge against goods in transit by $18,042,433 annually. The reduction in the value of commodities and aggregate tonnage handled would, of course, reduce these amounts. This illustration, however, will serve as an indication of the value and the amount of goods in the hands of the railroads and of the effect upon business of slow transportation.

TRAFFIC AVERAGES.

Table B40 shows that the traffic average, or the average revenue derived from each ton of freight on the basis of the individual railway, in 1911 was $1.14, in 1920 it was $1.91. The average receipts per ton-mile in cents in 1911 was 0.754, in 1920 was 1.052, and in 1921 was 1.274. The average by months during the year 1921 is as follows:

January, 1.210; February, 1.254; March, 1.335; April, 1.334; May, 1.251; June, 1.278; July, 1.254; August, 1.288; September, 1.288; October, 1.261; November, 1.284; December, 1.237. (See Table A2.)

Digitized by Google

Item.	Fiscal years ended June 30—					
	1911	1912	1913	1914	1915	1916
Freight revenue (Account 101)	$1,856,504,287	$1,897,692,838	$2,140,083,394	$2,059,891,935	$1,977,933,275	$2,402,210,995
Passenger revenue (Account 102)	636,341,495	639,818,627	678,966,749	683,748,602	629,237,464	673,806,175
Passenger service train-revenue (Accounts 102-109)	775,193,210	782,320,367	830,255,068	835,708,636	783,503,649	846,538,795
Traffic averages:						
Average revenue received from each ton of freight (indv. ry.)	$1.14	$1.13	$1.12	$1.12	$1.17	$1.15
Average receipts per ton-mile (cents)	0.743	0.730	0.719	0.723	0.722	0.707
Average haul per revenue ton (indv. ry.) (miles)	153.81	154.29	155.47	154.58	162.59	162.38
Average revenue received from each passenger	$0.68	$0.68	$0.69	$0.68	$0.67	$0.70
Average receipts per passenger-mile (cents)	1.964	1.978	2.002	1.976	1.979	2.002
Average journey per passenger (miles)	34.49	34.22	34.44	34.49	33.95	34.73
Per locomotive-mile averages:						
Passenger-train car-miles per locomotive-mile	5.31	5.36	5.42	5.48	5.65	5.78
Freight-train car-miles (including caboose) per freight locomotive-mile	26.50	27.11	27.79	29.24	31.46	31.85
Revenue ton-miles per freight locomotive-mile	348.52	368.13	398.43	405.76	429.25	478.55
Per train-mile averages:						
Passenger service-train-revenue per passenger train-mile	$1.40	$1.38	$1.43	$1.42	$1.39	$1.47
Freight revenue per freight train-mile	$2.94	$2.98	$3.29	$3.36	$3.53	$3.89
Total operating revenues per transportation service train-mile	$2.32	$2.37	$2.53	$2.53	$2.55	$2.83
Total operating expenses per transportation service train-mile	$1.61	$1.65	$1.77	$1.84	$1.80	$1.85
Revenue passenger-miles per passenger train-mile	58.33	56.95	58.49	58.87	56.30	58.44
Revenue ton-miles per freight train-miles	396.14	421.45	457.30	464.60	488.26	549.83
Employees per 1,000 transportation service train-miles	1.35	1.39	1.43	1.37	1.33	1.34
Compensation of employees per transportation service train-miles	$0.99	$1.02	$1.09	$1.11	$1.10	$1.14
Per car-miles averages:						
Revenue passenger-miles per passenger car-miles [1]	15.58	15.11	15.37	15.40	14.95	15.26
Passenger revenue per passenger car-mile [1]	$0.31	$0.30	$0.31	$0.30	$0.30	$0.31
Revenue tons-miles per loaded freight car-mile	19.71	20.16	21.10	21.08	21.14	22.39
Freight revenue per loaded freight car-mile	$0.15	20.15	$0.15	$0.15	$0.15	$0.16
Freight car-mile (including caboose) per freight train-mile	30	31	32	33	36	37
Freight revenue (Account 101) per mile of road	$8,629.00	$8,700.00	$9,608.00	$9,137.00	$8,659.00	$10,421.00

[1] Based on passenger car-miles of passenger, sleeping, parlor, and observation cars.

NOTE.—"Per train-mile" and "Per locomotive-mile" averages as applied to freight and passenger service based on train-miles and locomotive-miles, including proportion of mixed and special miles divided on basis of car-miles in mixed and special trains.

Digitized by Google

TABLE B40.—*Traffic averages of class I railroads—1911 to 1920*—Continued.

Item.	Calendar years ended Dec. 31—				
	1916	1917	1918	1919	1920
Freight revenue (Account 101)	$2,560,988,111	$2,819,965,215	$3,440,741,970	$3,543,266,303	$4,317,608,483
Passenger revenue (Account 102)	706,608,630	825,211,593	1,031,563,016	1,178,453,860	1,286,704,660
Passenger service train-revenue (Accounts 102-109)	890,314,574	1,025,373,353	1,247,637,547	1,400,613,589	1,635,672,177
Traffic averages:					
Average revenue received from each ton of freight (indv. ry.)	$1.17	$1.24	$1.49	$1.73	$1.91
Average receipts per ton-mile (cents)	0.707	0.715	0.849	0.973	1.052
Average haul per revenue ton (indv. ry.) (miles)	166.28	173.77	175.81	178.29	181.55
Average revenue received from each passenger	$0.70	$0.77	$0.95	$1.00	$1.04
Average receipts per passenger-mile (cents)	2.042	2.090	2.414	2.540	2.747
Average journey per passenger (miles)	34.38	37.01	39.33	39.36	37.94
Per locomotive-mile averages:					
Passenger-train car-miles per locomotive-mile	5.79	5.91	6.05	6.23	6.27
Freight-train car-miles (including caboose) per freight locomotive-mile	31.60	31.07	31.00	33.95	32.60
Revenue ton-miles per freight locomotive-mile	492.36	525.24	550.91	560.76	575.59
Per train-mile averages:					
Passenger service-train-revenue per passenger train-mile	$1.53	$1.76	$2.32	$2.56	$2.89
Freight revenue per freight train-mile	$3.99	$4.31	$5.38	$6.20	$6.87
Total operating revenues per transportation service train-mile	$2.94	$3.24	$4.15	$4.60	$5.17
Total operating expenses per transportation service train-mile	$1.93	$2.29	$3.39	$3.94	$4.88
Revenue passenger-miles per passenger train-mile	59.33	67.76	79.51	84.89	82.69
Revenue ton-miles per freight train-miles	565.21	602.70	634.39	637.14	652.41
Employees per 1,000 transportation service train-miles	1.35	1.40	1.57	1.71	1.68
Compensation of employees per transportation service train-miles	$1.20	$1.41	$2.22	$2.54	$3.06
Per car-miles averages:					
Revenue passenger-miles per passenger car-miles [1]	15.50	17.23	19.94	20.50	19.82
Passenger revenue per passenger car-mile [1]	$0.32	$0.36	$0.48	$0.52	$0.54
Revenue tons-miles per loaded freight car-mile	22.82	24.76	26.98	25.45	26.72
Freight revenue per loaded freight car-mile	$0.16	$0.18	$0.23	$0.25	$0.28
Freight car-mile (including caboose) per freight train-mile	36	36	36	37	37
Freight revenue (Account 101) per mile of road	$11,087.00	$12,145.00	$14,754.00	$15,155.00	$18,399.00

[1] Based on passenger car-miles of passenger, sleeping, parlor, and observation cars.

NOTE.—"Per train-mile" and "Per locomotive-mile" averages as applied to freight and passenger service based on train-miles and locomotive-mile, including proportion of mixed and special miles divided on basis of car-miles in mixed and special trains.

Digitized by Google

VOLUME OF TRAFFIC.

The factors of increased haul and increased volume bear an important relation to the net revenue of the carriers. Traffic can be handled more cheaply in quantity. Low ton-mile earnings need not necessarily reflect decreased net revenue. So many factors enter into the question of whether or not decreased freight rates will produce an increased volume of traffic that it can not be satisfactorily answered here and perhaps not at any time.

PASSENGER TRAFFIC.

Passenger earnings increased from $636,341,495 in 1911 to $1,286,704,660 in 1920, or 102.2 per cent. Mail traffic shows an increase in 1920 of 76.4 per cent over 1911, this calculation having been made on the basis of proper allocation to the years in which earned of the back mail pay received in 1920 and included in the revenue account for that year.

The express revenue increased from $69,331,172 in 1911 to $143,686,718 in 1920, or 107.2 per cent.

"All other revenue" increased from $140,995,057 in 1911 to $278,866,457 in 1920, or 97.8 per cent.

The revenue passengers carried increased from 938,655,719 in 1911 to 1,234,762,048 in 1920, or 13.2 per cent. Revenue passenger miles, however, show an increase of 50.9 per cent in 1920 over 1911, indicating that our people are traveling to greater distances, which is significant in view of the increase in the radius of distribution of commodities by freight.

Digitized by Google

TABLE B41.—*Revenues and expenses by general accounts and taxes—railroads of the United States.*

Year.	Freight revenue (accounts 101–121).	Passenger revenue.	Other revenue	Total operating revenue.	Maintenance of ways and structures.	Maintenance of equipment	Transportation expenses.	All other.	Total operating expenses.	Tax accruals.
All roads:										
June 30, 1890	$714,464,277	$260,786,453	$76,626,902	$1,051,877,632	$152,718,837	$114,038,756	$854,189,220	$71,147,158	$692,093,971	$31,207,469
1900	1,049,256,323	323,715,639	114,073,852	1,487,044,814	201,272,070	174,786,146	509,563,216	75,807,079	961,428,511	48,332,273
1910	1,925,553,036	623,992,473	257,596,066	2,812,141,575	368,507,102	413,109,929	916,614,826	183,647,261	1,881,879,118	93,034,593
1911	1,925,950,887	657,638,291	269,265,543	2,852,854,721	366,025,202	428,367,306	987,382,108	194,557,188	1,976,331,864	102,657,157
Class I roads:										
June 30, 1911	1,856,504,287	636,341,495	259,651,515	2,752,497,297	348,004,080	415,590,400	954,349,616	185,050,237	1,902,994,333	98,626,848
1912	1,897,692,838	639,818,627	267,495,079	2,805,006,544	348,470,704	436,995,458	984,852,159	188,776,490	1,959,094,811	109,445,407
1913	2,140,083,394	678,966,749	289,311,072	3,108,361,215	406,042,529	499,988,331	1,068,017,845	199,414,858	2,173,463,563	118,386,859
1914	2,059,891,935	683,748,602	287,696,426	3,031,326,963	403,682,503	520,200,274	1,073,981,380	205,559,565	2,203,423,812	125,572,579
1915	1,988,522,179	630,705,841	252,335,027	2,871,563,047	364,004,178	496,739,561	1,010,914,727	149,502,148	2,021,160,614	123,276,330
1916	2,415,048,777	675,216,483	291,332,606	3,381,597,866	404,514,144	557,654,332	1,090,100,194	158,614,116	2,210,892,786	145,517,084
Dec. 31, 1916	2,575,210,622	708,044,033	313,611,111	3,596,865,766	421,775,812	595,566,336	1,173,987,775	166,068,489	2,357,398,412	157,113,372
1917	2,832,923,825	826,666,315	354,552,607	4,014,142,747	442,109,862	685,428,913	1,515,938,879	185,797,470	2,829,325,124	213,920,095
1918	3,453,935,308	1,032,869,815	394,148,357	4,880,953,480	649,794,953	1,103,031,350	2,029,459,671	199,782,223	3,982,068,197	223,175,379
1919	3,556,451,084	1,180,276,923	408,067,147	5,144,795,154	772,186,045	1,226,532,195	2,168,646,844	232,350,431	4,399,715,535	232,601,396
1920	4,317,608,483	1,286,704,660	574,074,903	6,178,388,046	1,032,490,872	1,592,969,670	2,905,127,875	300,876,699	5,831,465,116	271,910,509
1921 [1]	3,924,318,000	1,153,885,000	438,814,000	5,517,017,000	757,128,000	1,248,218,000	2,264,770,000	292,089,000	4,562,155,000	276,724,000

[1] Partially estimated.

Digitized by Google

OPERATING EXPENSES.

Table B1 gives the total operating expenses segregated under maintenance of way and structures, maintenance of equipment, traffic, transportation, general, and all other expenses. Expenditures under the maintenance accounts have already been considered. The cessation of competitive activities during the period of Federal control resulted in a considerable decrease in expense for traffic organizations, which prior to the war and subsequently, were engaged in the solicitation of traffic. That competitive activity had not been wholly resumed in 1920 is indicated by the fact that expenditures under this account show an increase of only 29.7 per cent in 1920 over 1911. The increase in compensation to traffic department employees would more than account for this increase.

The transportation expense of the railroads is by far the most important. Increased volume of traffic is immediately reflected in increased expenditures under this account. Because of the increases in wages from time to time it is not possible to measure the exact effect the volume of traffic plays in this respect. The expenditures for transportation show an increase in 1920 of 204.4 per cent over 1911.

Under the general account are included expenditures for the salaries and expenses of general officers and incidental to general supervision of the railroad. This amount shows an increase in 1920 of 151.4 per cent over 1911.

All other expenses, however, show a decrease of 8.8 per cent in 1920 over 1911.

The total operating expenses shows an increase of 206.48 per cent in 1920 over 1911.

Tables B44 and B45 and charts B16 to B26, inclusive, give complete data showing the number of employees under the several classifications, the hours or days worked, and the aggregate compensation for the years 1916 to 1921, inclusive.

Chart B16 shows the number, service, and compensation of section men, the number of tons of rail applied in replacement, and the number of ties laid in previously constructed track, indexed to the year 1916, these figures being based upon the average per mile of track. The principal duty of the section forces is to maintain the tracks. Ties must be replaced in large volume each year; new rail must be laid as the old rail wears out. Railroads generally apply new rail to main-line track, using the rail taken out for sidetracks or branch lines. Less rail and less ties were laid in each succeeding year than in 1916. In 1918, 1919, and 1920 more section men were employed, but they worked less hours, although the compensation in each year subsequent to 1916 greatly exceeded the aggregate compensation for 1916. In 1921 the railroads reduced their section forces to a great extent. Not only was the number of men reduced but the hours of work were still further cut, and yet the aggregate compensation exceeded the amount paid in 1916.

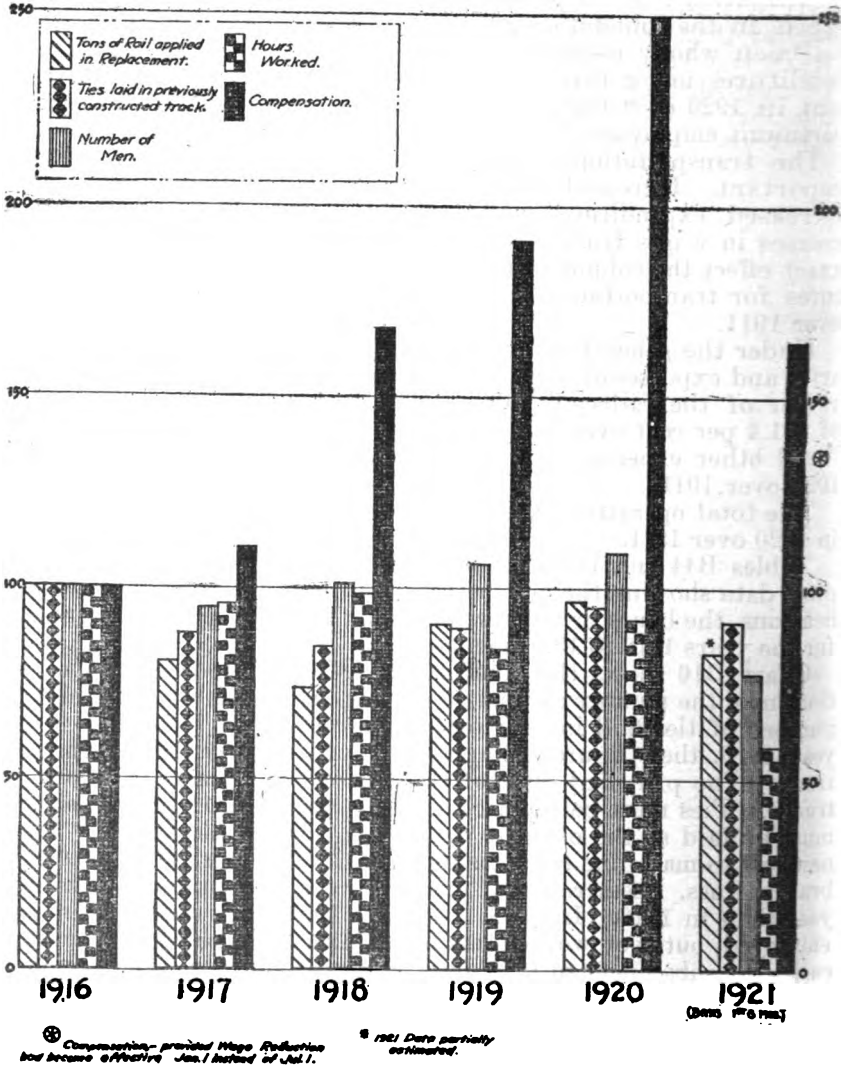
Charts B17 and B18 show the maintenance of equipment, foremen, car inspectors, car repairers, and air-brake men employed, with the days worked and the aggregate compensation, per 1,000 train-miles, indexed to 1916. The number of foremen, the days worked,

Digitized by Google

and the aggregate compensation show heavy increases for all years subsequent to 1916. During 1917 and 1918 the days worked increased in greater ratio than did the number of foremen. This was not the case in the years 1919, 1920, and 1921, when the number of

Chart B 16.

MAINTENANCE, STEAM RAILROADS—AVERAGE PER MILE OF TRACK—TRACK MATERIALS AND LABOR—SECTION MEN—SERVICE AND COMPENSATION (1916=100).

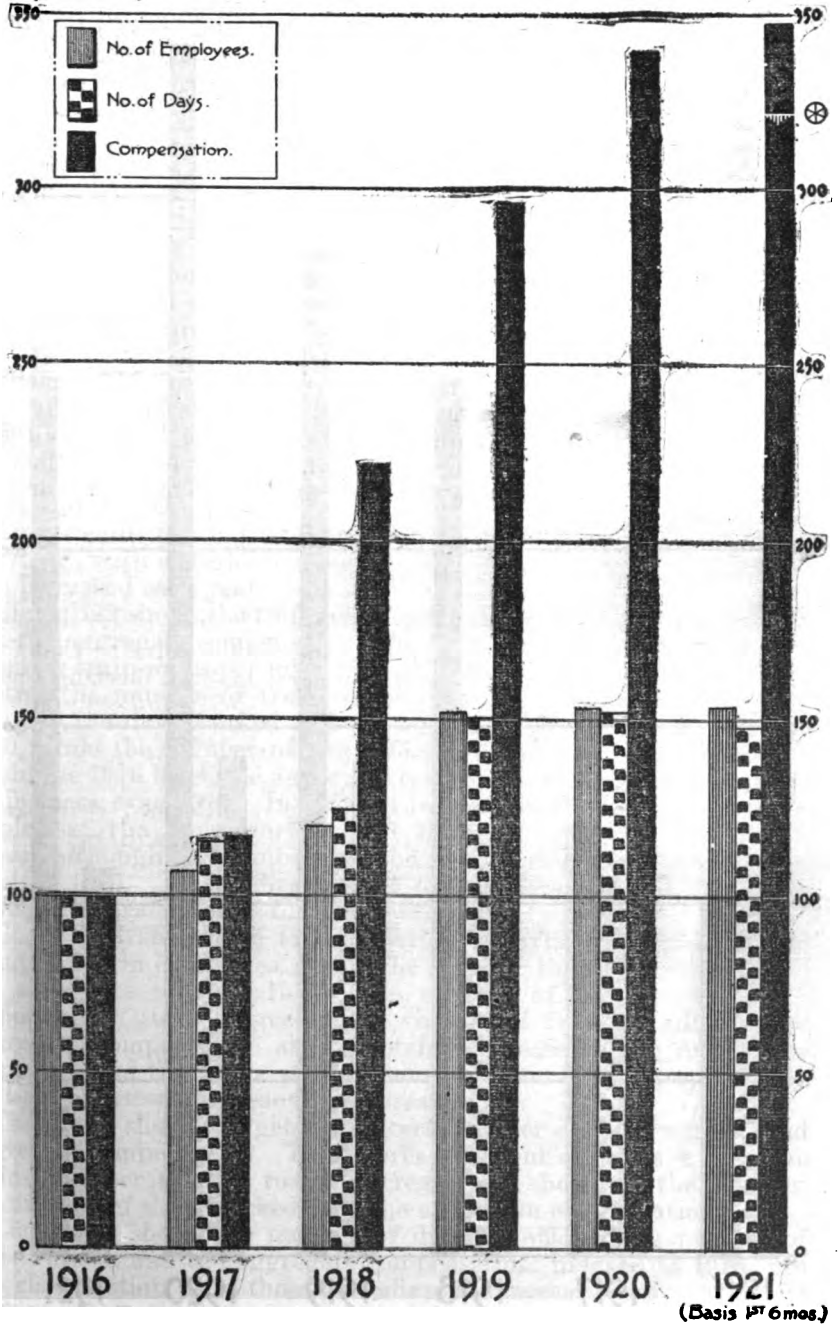


JOINT COMMISSION OF AGRICULTURAL INQUIRY.

foremen increased in greater ratio than did the days worked. The aggregate compensation increased greatly. In the case of the car inspectors, car repairers, and air-brake men, the same conditions obtained, with the exception that the hours worked in 1919, 1920, and 1921 decreased heavily. The number of men employed in 1919 and

Chart B 17.

MAINTENANCE, STEAM RAILROADS—AVERAGE PER 1,000 TRAIN MILES—FOREMEN, MAINTENANCE OF EQUIPMENT DEPARTMENT—SERVICE AND COMPENSATION (1916=100).



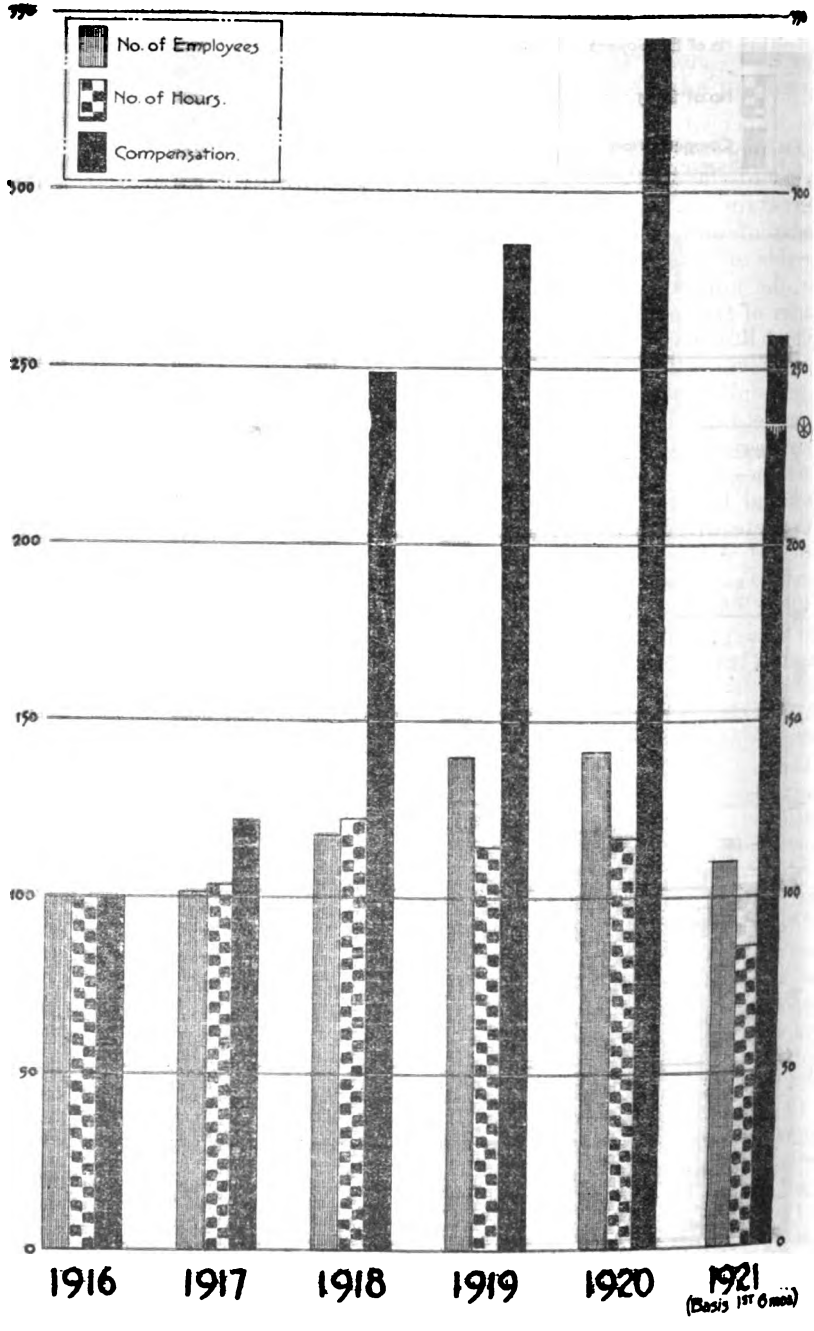
⊛ Compensation - provided Wage Reduction had become effective Jan. 1 instead of July 1.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

Chart B 18.

MAINTENANCE, STEAM RAILROADS—AVERAGE PER 1,000 TRAIN MILES—CAR INSPECTORS, CAR REPAIRERS, AIR-BRAKE MEN—SERVICE AND COMPENSATION (1916=100).



⊛ Compensation - provided Wage Reduction had become effective Jan. 1 instead of July 1.

Digitized by Google

1920 and the aggregate compensation shows heavy increases. The number of men, the hours worked, and the aggregate compensation decreased in 1921, due to a policy of deferred maintenance on the part of the carriers.

Charts B19 and B20 show the number of freight-train employees and the passenger-train employees, the hours worked, and the aggregate compensation. In the case of the freight-train employees, the figures represent the average per 1,000 freight-train miles, and in the case of the passenger-train employees the average per 1,000 passenger-train miles. As in other branches of railroad service, the number of employees and the aggregate compensation shows considerable increase over 1916. In these two classes of employees, however, the number and the hours worked depend largely upon the number of trains operated.

Chart B21 gives the same information for the clerical forces. The figures from which this chart was made represent an average based on train-miles per mile of track, it being recognized that the clerical forces not only have to do with the operation of trains, their number being increased or diminished as the volume of traffic increases or diminishes, but they also have to do with the maintenance of the track and the equipment. In number the clerical forces have increased steadily each year since 1916. The hours worked have also increased, with a slight recession in 1921. The aggregate compensation increased each year.

Chart B22 shows the traffic employees, the number of days worked, and the aggregate compensation, the figures representing an average based on train-miles per mile of road. During the period of Federal control the number of traffic employees was gradually reduced, as was also the days worked and the aggregate compensation. During 1920, while the number of employees and the days worked did not attain the 1916 level, the aggregate compensation for that year shows an increase over 1916. In 1921 an increase in the number of traffic employees, the days worked, and the aggregate compensation is shown, although the number and the days worked did not attain the level of 1916. This indicates that the carriers had not as yet restored their traffic forces to the prewar basis.

Chart B23 shows the transportation department employees, exclusive of train employees, giving the number, the hours worked, and the aggregate compensation. The number of these employees is responsive in some degree to the volume of traffic handled. The aggregate compensation shows notable increases. The number of employees and the hours worked increased over 1916, except that in 1921 the hours worked shows a decrease.

Chart B24 shows the general officers, number of days worked, and aggregate compensation. The figures represent an average based on train-miles per mile of road. Increases are shown in the number, the number of days worked, and the aggregate compensation.

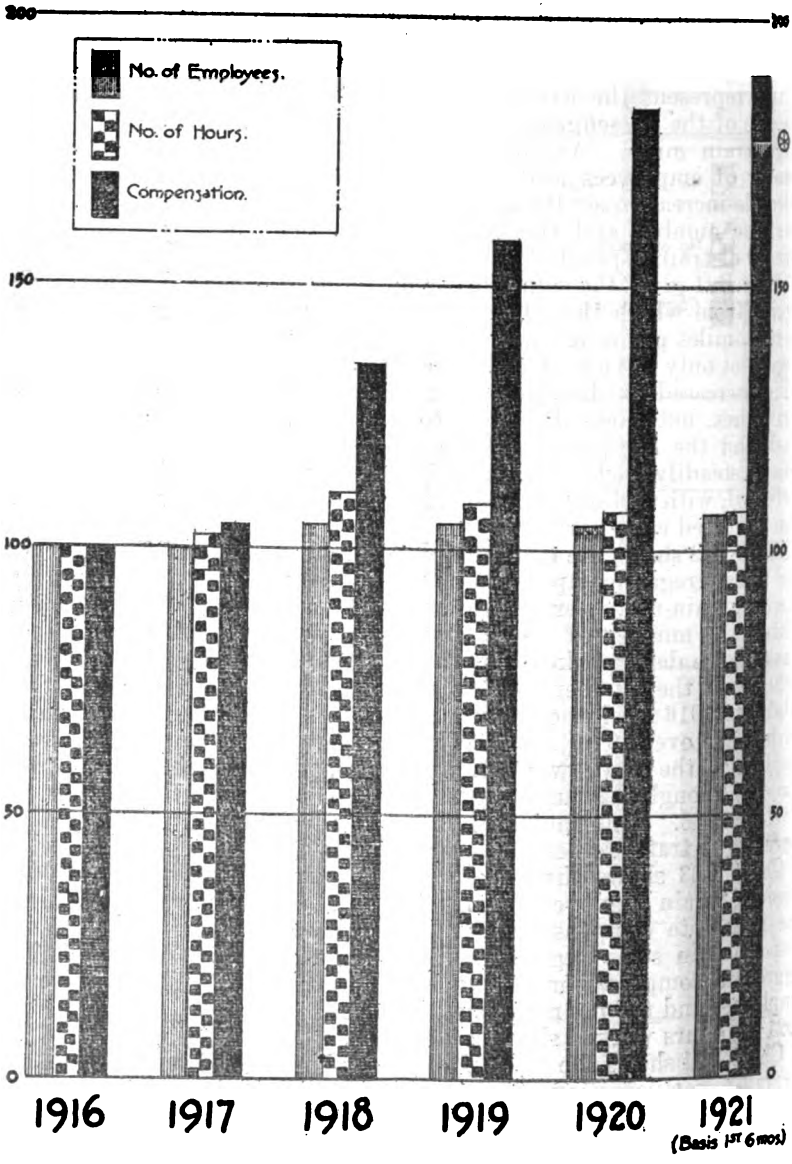
Chart B25 shows the number of division officers, the number of days worked, and the aggregate compensation, indexed to 1916. In this classification, as in those preceding, the increase in the aggregate compensation was in greater ratio than the increase in the number of employees and the number of days worked.

Chart B26 indicates graphically the number of all employees of railroads, the number of hours worked, and the aggregate compensa-

Digitized by Google

Chart B 19.

OPERATION, STEAM RAILROADS—AVERAGE PER 1,000 PASSENGER TRAIN MILES—PASSENGER TRAIN EMPLOYEES—SERVICE AND COMPENSATION (1916=100).



⊛ Compensation - provided. Wage Reduction had become effective Jan. 1 instead of July 1.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

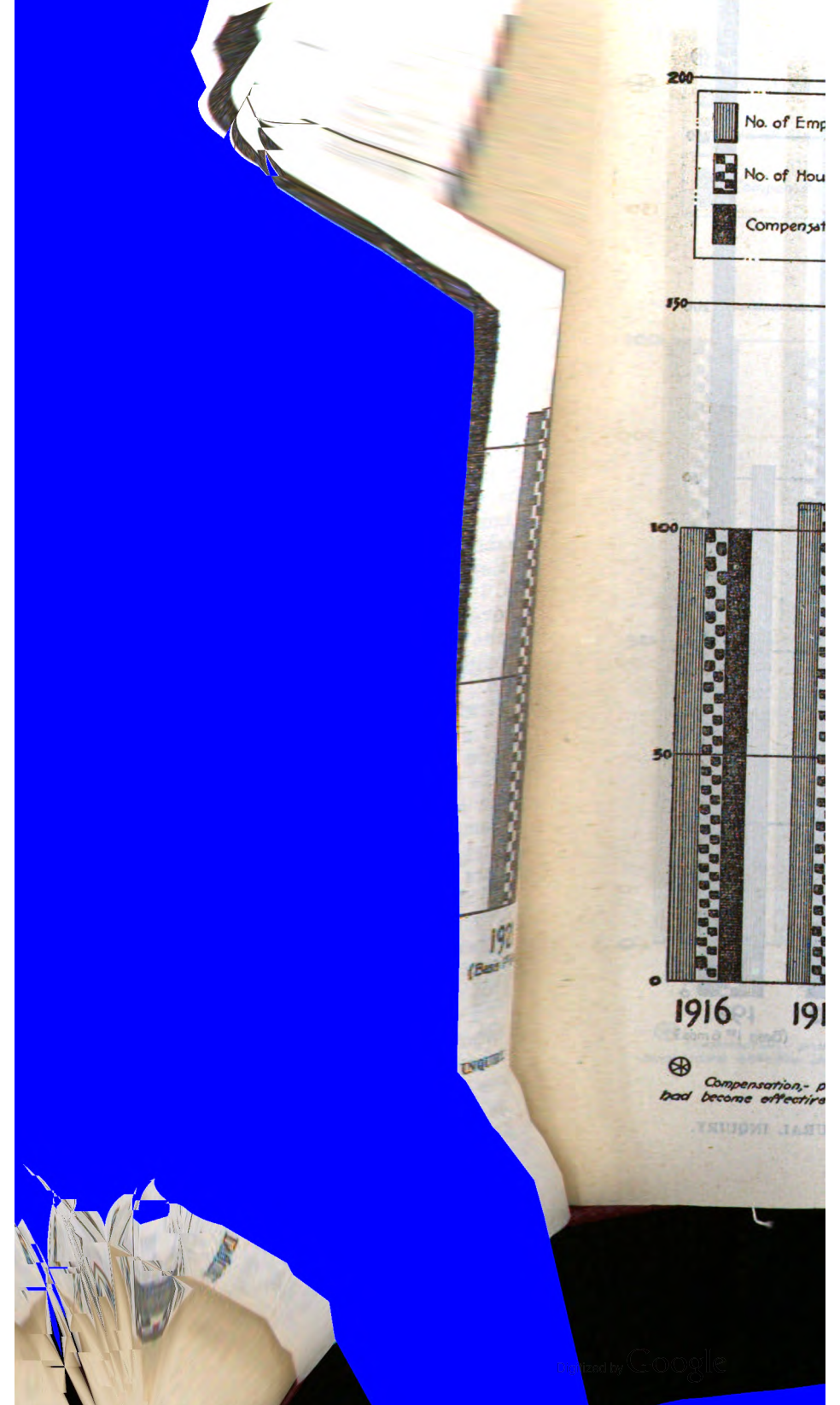
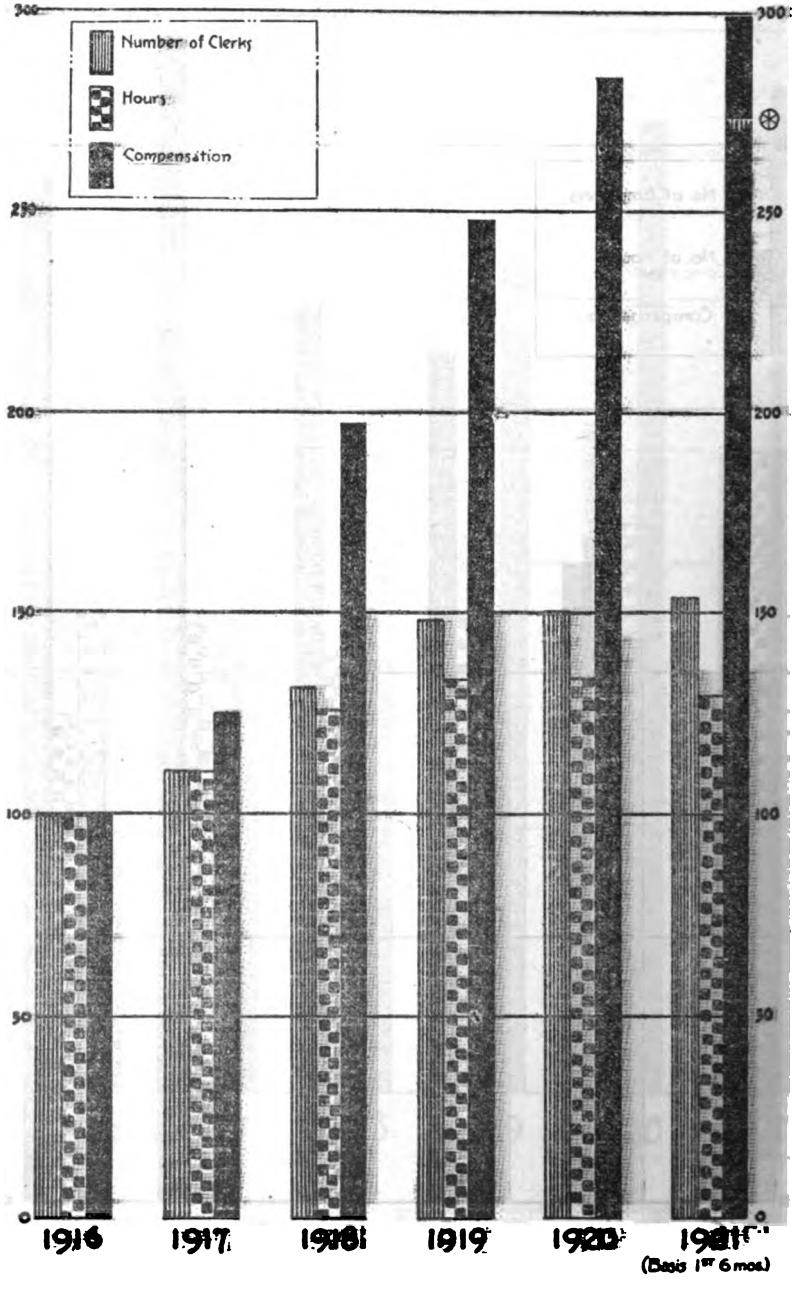

200
No. of Emp
No. of Hou
Compensat
150
100
50
0
1916
191
Compensation,- p
had become effectiv

Chart B-21.

OPERATION, STEAM RAILROADS—AVERAGE BASED ON TRAIN MILES PER MILE OF TRACK—CLERICAL FORCES—SERVICE AND COMPENSATION (1916=100).

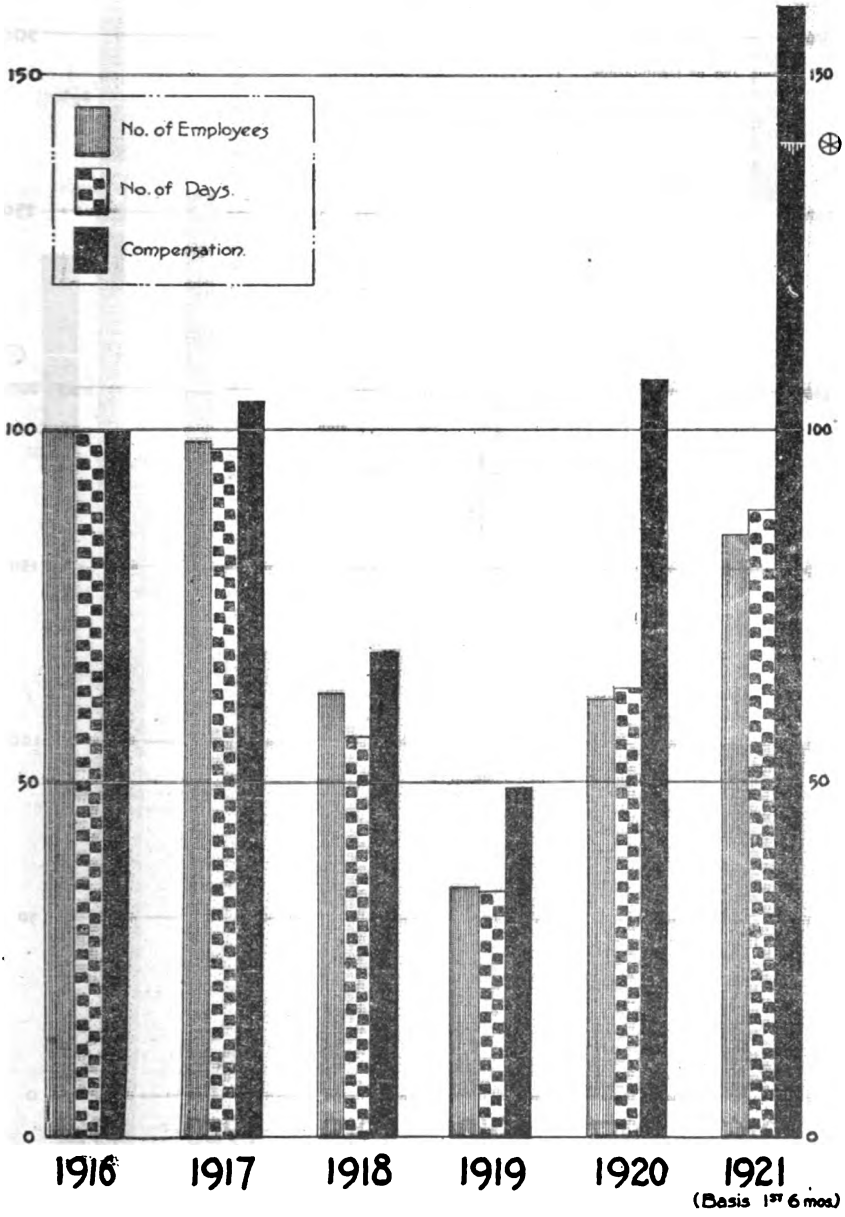


⊛ Compensation,- provided Wage Reductions had become effective Jan. 1 instead of July 1.

Digitized by Google

Chart B 22.

OPERATION, STEAM RAILROADS—AVERAGE BASED ON TRAIN MILES PER MILE OF ROAD—TRAFFIC EMPLOYEES—SERVICE AND COMPENSATION (1916=100).

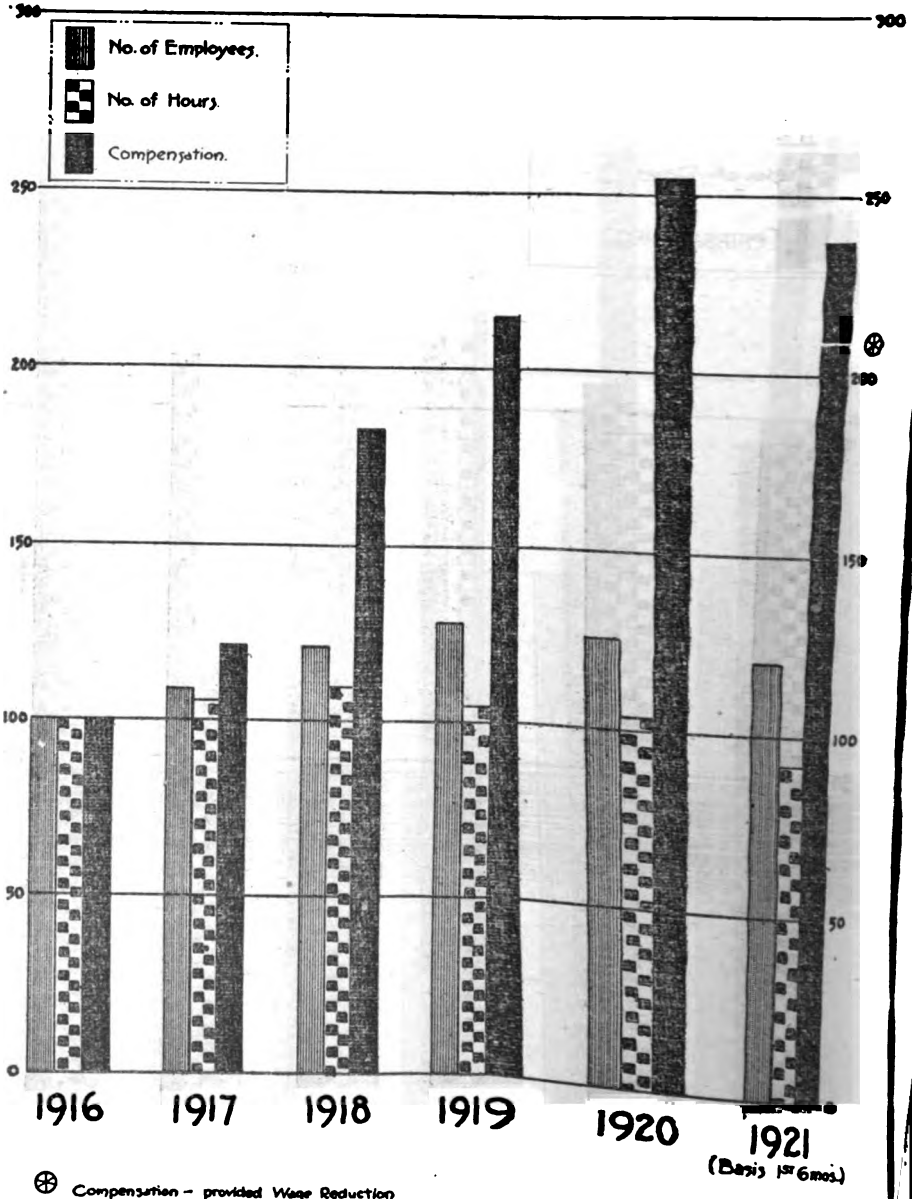


⊛ Compensation,— provided Wage Reduction had become effective Jan. 1 instead of July 1.

Digitized by Google

Chart B 23.

OPERATION, STEAM RAILROADS—AVERAGE PER 1,000 TRAIN *MILES*—TRANSPORTATION DEPARTMENT EMPLOYEES, EXCLUSIVE OF TRAIN EMPLOYEES—SERVICE AND COMPENSATION (1916=100).

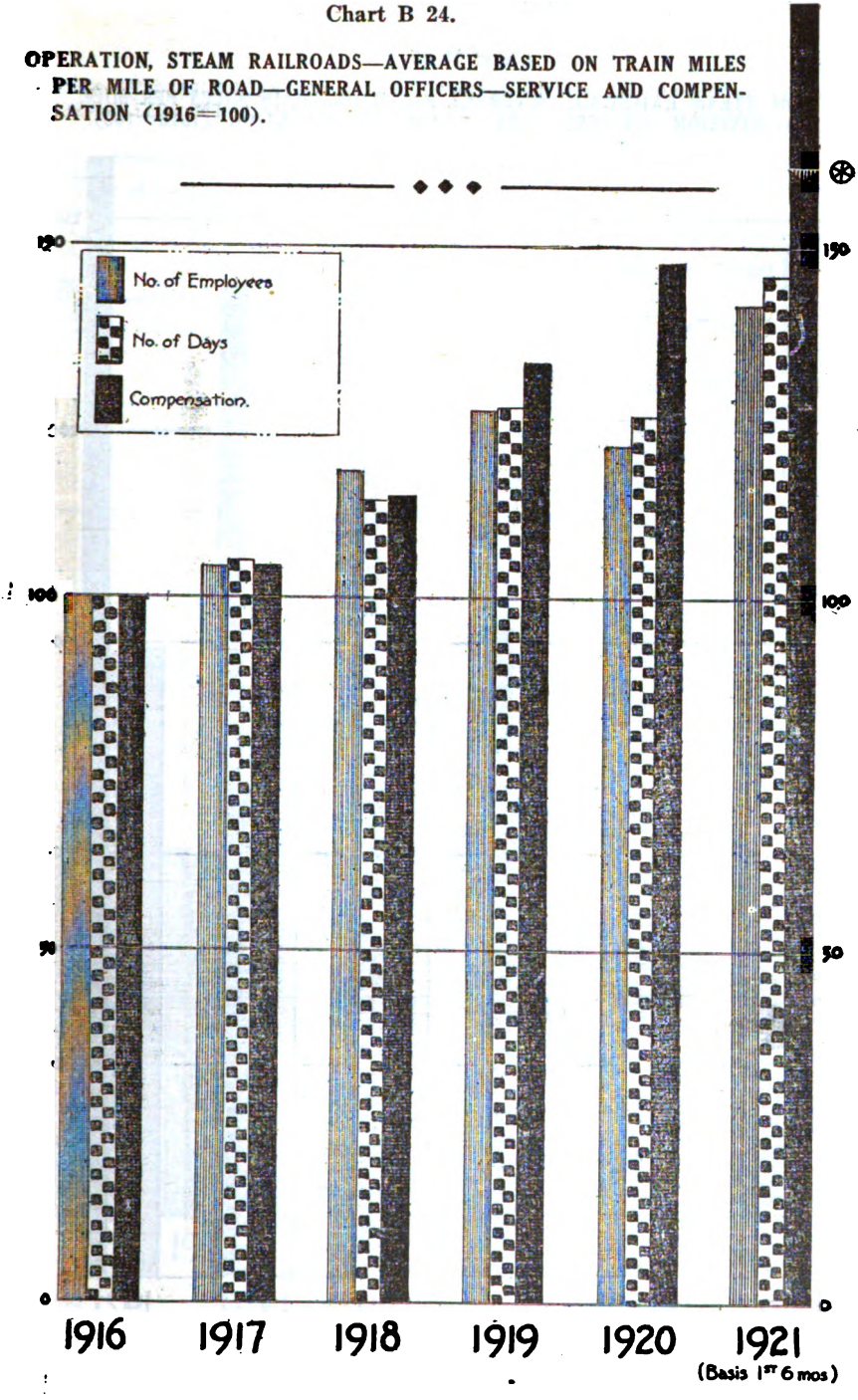


JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

Chart B 24.

OPERATION, STEAM RAILROADS—AVERAGE BASED ON TRAIN MILES PER MILE OF ROAD—GENERAL OFFICERS—SERVICE AND COMPENSATION (1916=100).

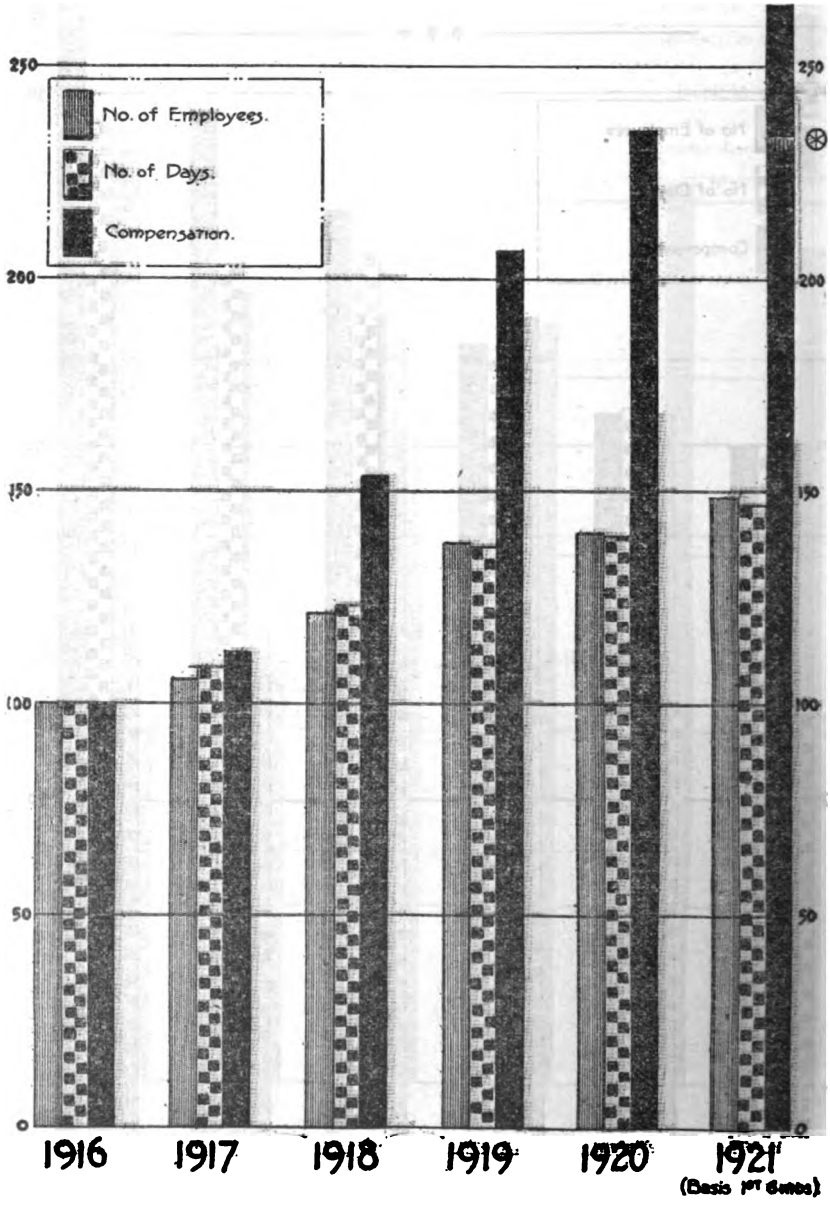


⊛ Compensation- provided Wage Reduction had become effective Jan. 1 instead of July 1

Digitized by Google

Chart B 25.

OPERATION, STEAM RAILROADS—AVERAGE BASED ON TRAIN MILES PER MILE OF ROAD—DIVISION OFFICERS—SERVICE AND COMPENSATION (1916=100).



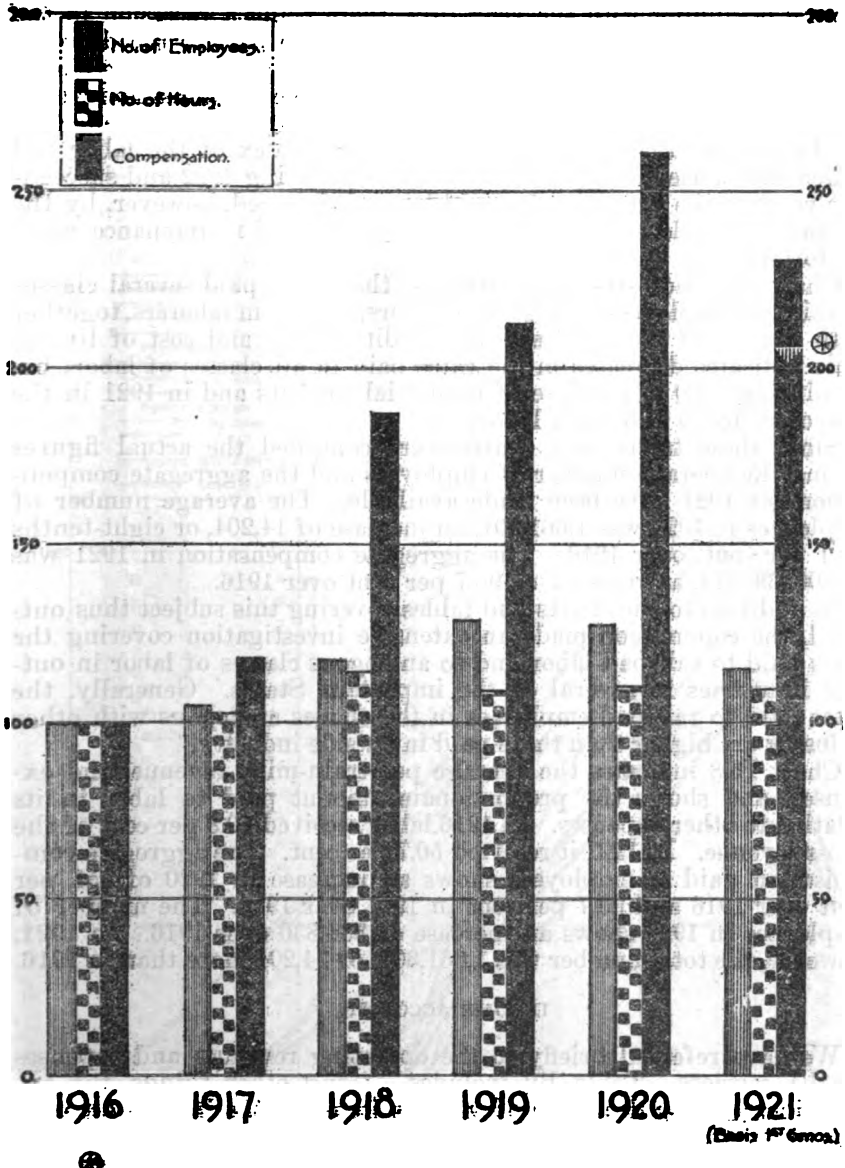
⊛ Compensation,- provided Wage Production had become effective Jan.1 instead of July 1.

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

Chart B 26.

OPERATION, STEAM RAILROADS—AVERAGE BASED ON TRAIN MILES PER MILE OF ROAD—ALL EMPLOYEES—SERVICE AND COMPENSATION (1916=100).



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

tion. The figures which support this chart represent an average based on train-miles per mile of road. This indicates clearly the increases in the number of employees, with the hours of work, increasing at a lesser ratio, while the compensation shows remarkable increases beginning with the year 1917, there being a recession in the aggregate compensation for 1921, due in large part to the decrease in the number of employees. This chart and all the preceding charts covering this subject indicate what the aggregate compensation would have been had the wage reduction of July 1, 1921, been made effective on January 1, 1921. This will serve as an index of the labor bill which the carriers may be required to meet during 1922 and succeeding years at the present rates paid labor, influenced, however, by the volume of traffic handled and by the volume of maintenance work performed.

Chart B27 indicates the relation of the wages paid several classes of railroad employees, industrial workers, and farm laborers, together with indices of the wholesale commodity prices and cost of living. This indicates decreases in the rates paid in all classes of labor, beginning in 1920 in the case of industrial workers and in 1921 in the case of railroad and farm labor.

Since these tables and charts were compiled the actual figures giving the average number of employees and the aggregate compensation for 1921 have been made available. The average number of employees in 1921 was 1,661,301, an increase of 14,204, or eight-tenths of 1 per cent, over 1916. The aggregate compensation in 1921 was $2.800,896,614, an increase of 90.7 per cent over 1916.

In addition to the charts and tables covering this subject thus outlined, the commission made an extensive investigation covering the rates paid to railroad labor and to analogous classes of labor in outside industries in several of the important States. Generally, the rates paid to railroad employees in the classes analogous with other industry are higher than those paid in outside industry.

Chart B28 indicates the average per train-mile, revenue, and expenses, and shows the proportionate amount paid to labor in its relation to other expenses. In 1916 labor received 40.8 per cent of the gross revenue. In 1921 it received 50.7 per cent. The aggregate compensation paid to employees shows an increase in 1920 of 151 per cent over 1916 and 90.7 per cent in 1921 over 1916. The number of employees in 1920 shows an increase of 384,830 over 1916. In 1921, however, the total number was 1,661,301, or 14,204 more than in 1916.

INCOME ACCOUNT.

We have referred briefly to the operating revenues and expenses of the carriers. Table B2 includes, among other things, the annual increases or decreases of various items of the income account. The operating revenues of the carriers are, of course, susceptible of increase only through an increase in freight rates and passenger fares, or by an increased volume of traffic handled under favorable conditions as to cost.

The most favorable year in recent railroad history from the standpoint of net revenues was 1916. For comparative purposes it is necessary to use the calendar year of 1916 for, although the fiscal year ended June 30, 1916, shows an even more favorable situation,

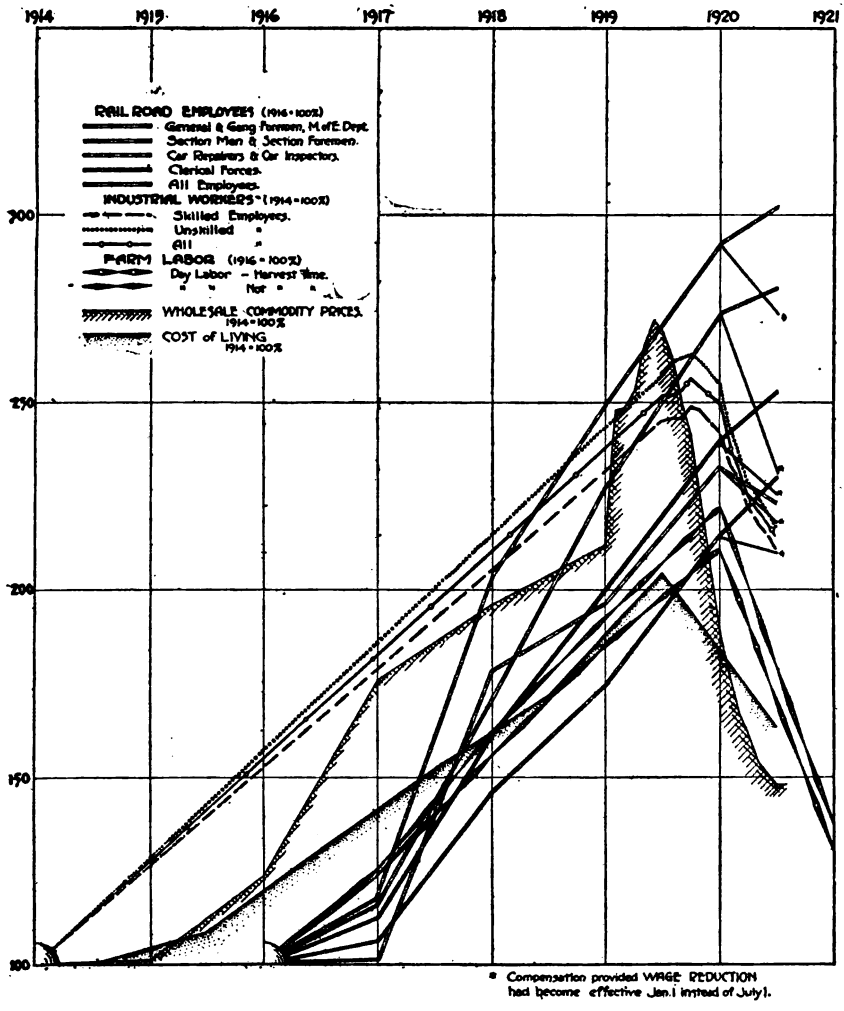
Digitized by Google

it is not possible to draw a proper comparison as between the calendar years following and the fiscal year.

In the year ended December 31, 1916, the net operating revenue shows an increase of 45.9 per cent over 1911. The net ton-mileage shows an increase of 43.9 per cent over 1911. The effects of the war

Chart B 27.

OPERATION, STEAM RAILROADS—WAGES OF LABOR: RAILROAD—ON THE FARM—OTHER INDUSTRIES.



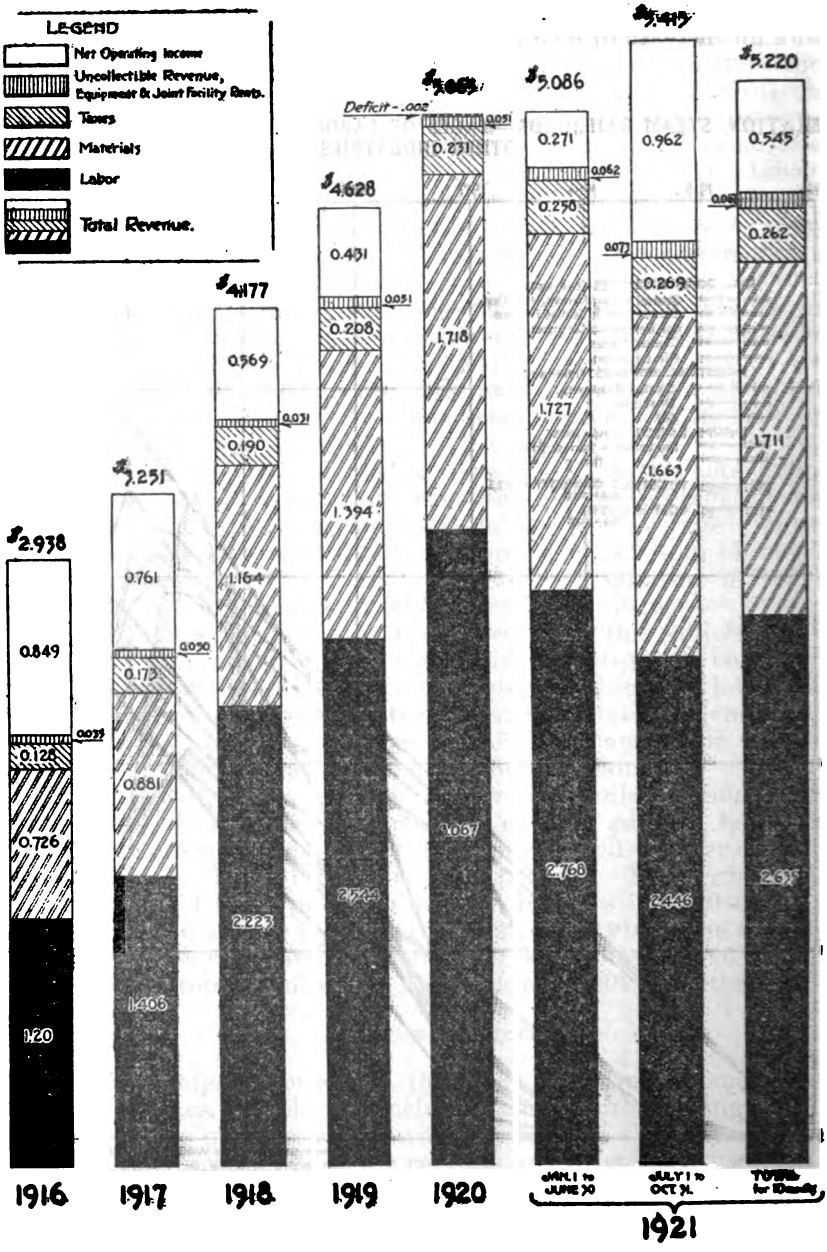
JOINT COMMISSION OF AGRICULTURAL INQUIRY.

were noticeable in 1917, which shows an increase of 53.6 per cent in net ton-miles, when compared with 1911, but an increase of only 39.5 per cent in net operating revenue, or a decrease of 5.5 per cent under the previous year. In 1918, with an increase in gross revenues of 77.3 per cent over 1911, there was an increase of 109.3 per cent in

Digitized by Google

Chart B. 28.

AVERAGE PER TRAIN MILE, REVENUE AND EXPENSES, STEAM RAILROADS.



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

total operating expense, and an increase of only 5.8 per cent in the net operating revenue, while the net operating income decreased 11.9 per cent. In 1919 the gross revenue increased 86.9 per cent, but the steady upward trend costs is reflected in an increase of 131.2 per cent in the total operating expense. The net revenue, therefore, shows a decrease of 12.3 per cent and the net operating income a decrease of 37.2 per cent. In 1920 the situation was still worse. The gross operating revenue shows an increase of 124.5 per cent over 1911, the total operating expense an increase of 206.4 per cent, net operating revenue a decrease of 59.2 per cent, while the net operating income shows a decrease of 97 per cent.

Tables B1 and B2 and chart B1 show the various items of the income accounts, and also show the per cent of annual increase and the increase in each year over the year 1911. Table B41 gives the revenues and expenses by general accounts, Table B42 the passenger-service train revenue, and Table B43 the income account of the Pullman Co.

Chart B28 gives the average per train-mile of revenue and expenses, segregated as to general accounts.

Chart B1 shows the situation graphically, and indicates the great shrinkage in net operating revenue and net operating income. Among the deductions which must be made from net operating revenue are the taxes, both State and Federal. In 1911 the railroads paid taxes amounting to $98,626,848. In 1913 this had increased to $118,386,859, of which $113,660,997 was paid as State taxes and $4,725,862 as Federal taxes. In 1920 State taxes had risen to $223,291,201, and Federal taxes were $48,619,308, a total of $271,910,509, or an increase of 175.7 per cent over the year 1911. The rate of return on investment in 1911 was 5.08 per cent. In the calendar year 1916 it was 6.16 per cent. In 1920 it was 0.11 per cent. These figures based upon the net operating income, which does not include the amounts paid to the railroad companies by the Government during the period of Federal control and during the guaranty period in 1920.

With some notable exceptions, the present facilities of the steam railroads of the United States will, with increased operating efficiency, meet the present needs for transportation. The exceptions include terminal facilities and the supply of freight-car equipment.

Although operating efficiency shows a steady improvement, the lack of terminal tracks and facilities and of a sufficient number of freight cars has, during periods of business prosperity, proved to be a severe handicap to the business of the country, influencing as it does the processes of inflation at the outset and later the reaction by the stagnation it has induced.

The commission desires to emphasize the premise that transportation should be an incident to trade and should never restrict commerce.

The whole course of law enactment affecting interstate and foreign commerce has been based upon the principle that no restrictive influences shall be placed upon the interchange and transportation of the commodities necessary to daily life and the advancement of our civilization. Full recognition must be given to the progress made in transportation by steam railroad and to the possibilities of industry and commerce it has created by the extension of the

Digitized by Google

radii of distribution. This mode of transportation must continue to bear the burden of the Nation's traffic, and it should not be permitted, therefore, in any manner to restrict the exchange and transportation of the commodities produced and offered for exchange.

The necessity for the increase and improvement of railroad facilities must be measured not by the volume of traffic moving presently nor in previous years on the average, but by the amount moved during the years of greatest business activity plus the annual increase produced by the steady growth of the country and the expectancy of the continuance of such normal growth. Increases in efficiency made possible by improved devices will in some degree modify these requirements. It is essential, however, and the country demands that there shall be a margin in the transportation facilities in excess of what are termed "normal requirements," so that any expansion of business activity may proceed unhampered.

The car supply must at all times meet every reasonable demand. The terminal facilities must be improved to handle adequately all traffic seeking an outlet through the ports or inland termini, either by the unification and joint operation of existing terminal facilities or by the addition of new trackage and other facilities, or by both.

We have every reason to believe that the managers of the steam railroads will continue to adopt improved devices and methods, and thereby increase efficiency of operation; that the officers and employees will by study and application fit themselves better to perform their important duties, so vital to the public welfare; that the shipping public will cooperate with the carriers, and, meeting their representatives upon common ground of mutual understanding, minimize the occasion for governmental intervention.

We are endeavoring to present a picture here not of the amounts finally received by the railroad corporations but of the operating conditions which have been met during the past several years, and while it is confidently hoped that such conditions will not again obtain, we must base our calculations for the future upon the facts presented herein. The transportation facilities of the country must be placed upon a solid foundation. It will not do to make up deficits by appropriations of public funds. The railroad companies must be operated with the expectation that the gross revenues will be sufficient to cover operating expenses and leave a reasonable return upon the investment. It is of paramount importance to the public welfare that the transportation companies be made going concerns; that they be placed upon a substantial foundation in every respect; and that the operating expenses be reduced by careful and efficient management.

Digitized by Google

Chapter III.

RAILROAD MANAGEMENT AND ORGANIZATION.

The efficiency of railroad management under private control demands adequate service to the public at the lowest cost. Railroads are engaged in the manufacture and sale of transportation, their output being measured in units of tons and passengers carried 1 mile. The efficiency with which they function as a whole is measured by the quantity and quality of that output. The efficiency of railroads varies with different railroads and involves a great many operating factors which differ with the methods, practices, and organization of each individual road. It was impossible for this commission to make such an examination and analysis of the operation of each individual railroad as would permit arriving at conclusions or making suggestions with respect to the efficiency of each individual line. Certain general figures, however, have been set up which indicate in a general way the efficiency of railroads in recent years, compared with prior years. These comparisons in a general way reflect the improved efficiency of railroad management. In 1920 a record movement of 447,278,126,869 ton-miles of traffic was handled, with 10,100.904 less freight-train miles than were necessary to handle 440,001,713,665 ton-miles in 1918, which was the first year of Federal control and the previous record year. The passenger-train service in 1920 showed an increase of 20,443,374 train-miles over 1919, but passenger service has not yet been fully restored to the level existing prior to Federal control. Another measure of the efficiency of railroad management can be obtained by a comparison of the actual performance of railroads with investment in properties over a series of years. The statistics of the Interstate Commerce Commission show that for every $100 investment in property reported by the railroads, the performance in 1890 was 983 tons of freight carried 1 mile and 163 passengers carried 1 mile. As a result of improved equipment, better methods of operation, and supervision since 1890, the railroads in 1920 carried for every $100 of property investment 2,063 tons of freight 1 mile and 231 passengers 1 mile, representing an increase of 110 per cent in freight and 50 per cent in passenger traffic.

The processes of railroad business represent a continued cycle of experimentation in efforts to better and cheaper facilities and operation, but there is doubtless room for much further improvement, especially through the introduction of more advanced methods in railroad shops and the installation of new and more efficient designs of machinery and buildings.

During the period of Federal control terminal facilities in many of the larger cities of the United States were consolidated. These consolidations have been largely abandoned under private control. This commission believes that the unification and joint operation of terminals affords an opportunity for very large savings in operat-

Digitized by Google

ing costs, and will also contribute to the efficiency of the operation of the railroads as a whole, and that such unification and joint operation of railroad terminals should be accomplished wherever better service and more efficient operation can be secured at less cost.

There is also an excessive duplication of tracks to parallel construction which should be eliminated by appropriate traffic arrangements between the railroads concerned. This commission believes such arrangements should be consummated wherever they can be in keeping with the maintenance of reasonable competition between the railroads, in order to avoid the unnecessary expense of operation which this parallel construction involves. The interests of individual railway managements under private and competitive operation are not identical. This lack of identity of interests results in differences of opinion and disputes between railway managements which can not be entirely avoided if the interests of the individual properties and the people whom they serve are to be fully protected. These disputes and differences should be reduced to the minimum by conference and agreement, in order that the public function of transportation may be carried forward properly and efficiently and the questions involved be determined without resort to the constituted public authority. Nothing is clearer than the close interrelation of interest and interdependence of agriculture, transportation, and industry. There should be a better appreciation on the part of each of the problems of the other, and a closer contact with the responsible representatives of these three great interests. The failure to appreciate this interdependence is in a large degree responsible for the existence of the present railway trouble, and this commission believes that the establishment of public-service departments by the railroads which have not already created them would do much to correct this situation.

The extent of the supervision and control exercised by management over transportation costs and operating performance is not generally appreciated by the public. A detailed statement, with accompanying exhibits showing the cost-accounting system of one of the large railroads of the country, was presented to the commission. This statement and the exhibits accompanying it show a very careful analysis of the costs of the various operations performed by the railroad, and that the management, especially of the large lines, is currently advised in regard to detailed items of cost and their relation to performance. These detailed items of cost show daily fuel consumption per unit of service, the actual performance of trains and locomotives, the coal consumed in such operation, labor cost, and all other items of cost and service which are necessary to accurately gauge the performance of the road and to supervise and control its operations upon the most effective and efficient basis.

In dealing between themselves and as a group with the public the management has set up various organizations throughout the country, the most important of which are the various consolidated tariff bureaus and the American Railway Association.

The duties of the tariff bureaus are the coordination and publication of passenger and freight tariffs. Since the return of the railroads to their owners by the Federal Government, these bureaus have established so-called standing rate committees whose functions are to deal directly with the shippers of the country when discussing

Digitized by Google

rate changes. The establishment of these standing rate committees represents an advancement in railway management in dealing with the public. Usually the occupants of positions on these committees are men of high caliber and long experience, and with a few exceptions are generally sympathetic with the needs of the shippers in the territories under the jurisdiction of the particular tariff bureau.

The American Railway Association had its origin in the "Time-table convention" in 1872, and the name was finally adopted in 1891. Its original purpose was "to harmonize and coordinate the principles and practices of American steam railroads with respect to their construction, operation, and maintenance." During and since the war, however, the scope of the work of the association has been enlarged, until to-day it is the central organization of steam lines in dealing with the public, Government departments, etc., and in coordinating the activities between the railroads. The association work is conducted by committees under the following general divisions: Operating, transportation, engineering, traffic (as related to operation), mechanical, purchases and stores, and freight claims.

There are in addition committees of the association which are in charge of the following subjects: Car service, automatic train control, fuel conservation, and inspection of standard material.

The car service division is an agency of the American Railway Association and is composed of a chairman and requisite number of managers, with headquarters at Washington. Its principal duties are to: (1) Supervise the application of car service and per diem rules; (2) regulate car supply as between railroads, and, when necessary to meet traffic conditions, to transfer cars from one railroad or territory to another; and (3) obtain and compile such statements and car performance statistics as deemed necessary.

The car service division maintains contact with the Bureau of Service of the Interstate Commerce Commission, assisting in the adjustment of all complaints as to car service and supply brought to its attention through this medium. While its policy is to influence and encourage direct working relationships between the shipper and railroad, nevertheless its offices are at all times available for such use as may be necessary or advisable in maintaining close cooperation between the public and the railroads in all matters respecting car service. The service to the railroads and to the public in the five years of the existence of the car service division has justified its conception and continued maintenance.

But no car service control which depends wholly upon voluntary agreement and action of the carriers themselves can be wholly successful in the accomplishment of purposes for which central control of cars is established. The commission is consequently of the opinion that there should be a central control of cars, clothed with sufficient authority to require the current balancing of car movements, with a view to avoiding car shortages and emergencies which arise from them, as well as the cost incident to unnecessary empty-car movement, and providing for divisional agencies, having the necessary organization and power to keep advised currently of car movements, and to provide promptly for the movements necessary to balance the excess movement in one direction.

Digitized by Google

Chapter IV.

RAILWAY FINANCE.

Agriculture, as the greatest of American industries, is peculiarly dependent upon transportation, which is the second industry. The two have many interests in common, and the crippling of either reacts upon the other. It is vital to the farmer that he should have prompt and adequate transportation for his crops at reasonable rates. To meet this need, the development of the railroad facilities of the country should be kept abreast of the growth of population and of the consuming capacity of that population.

The Nation should have an adequate and efficient transportation system, and such system should make proper use of all available and suitable agencies. Transportation should be so coordinated that each agency can perform the particular function for which it is best adapted, to the end that transportation may be produced most economically, taking into consideration all elements of cost.

The steam railway system of the United States is in large part the result of private initiative and enterprise and is owned by our citizens and their savings banks, insurance companies, charitable, educational, and other institutions. Some of our large transcontinental systems were built, however, with Government aid in the form of land grants, and in some cases financial assistance. Not infrequently has private enterprise ventured its capital into the construction of railroads in undeveloped territories, which at the time offered little prospect of returns for many years to come. Some of these ventures have been very successful and have contributed to the upbuilding of systems of railways efficient in themselves and strong financially. Other ventures have been less successful, partly because of years of severe competition, partly because the development of the country tributary to the line was long deferred, and partly because they were ill conceived and wrongly located. Some lines, well conceived and properly constructed, have suffered through unsound or even improper financing. The principal losses incident to such improper financing have fallen upon the investing public.

The purpose of this inquiry concerning railroad finance and credit is to consider it constructively in its relation to agriculture and industry at the present time and in the future.

In considering the financial aspects of the transportation industry, it is recognized that the cost of capital is a part of the cost of transportation and enters into the rate charged for transportation. An investment which commands public confidence and brings an assured return is more freely made and on a lower basis of cost than one which is subject to uncertainty and possible attack. It is therefore of great importance that the earnings of well-managed and properly capitalized railroads should be such as will protect

Digitized by Google

their securities outstanding and attract, on reasonable terms, the new money needed for additional facilities. While there has been more general public discussion of, and inquiry into, the cost of sustaining railroad investment, yet the return paid thereon requires a much smaller outlay than for most of the other important railroad costs.

The Interstate Commerce Commission, organized and acting under the act of 1887, and amendments thereto, has from the beginning required reports and statistics from the carriers. The regulations covering the accounts and reports of the carriers have been enlarged and improved from time to time, and the reports have become more uniform and exact. The commission established detailed rules with respect to both the income and capital accounts in 1907, but it was not until 1914 that the commission was given power to enforce its regulations. No more comprehensive and valuable data with respect to railroad operation generally is available than the compilations made by the Bureau of Statistics of the Interstate Commerce Commission.

The Thirty-fifth Annual Report of the Interstate Commerce Commission gives the total property investment of the carriers (excluding switching and terminal companies):

December 31, 1920		$19,839,276,119
The foregoing investment does not take into account—		
Materials and supplies which on December 31, 1920, approximated	$765,000,000	
Working capital	550,000,000	
		1,315,000,000
Taking these elements of investment into account, the total property investment used in the transportation service is approximately		21,154,000,000

While the carriers have relied upon their property investment accounts as the best information reflecting the investment in their properties, these accounts have been criticized and questioned in various ways. In their decision in the so-called Five Per Cent case, July 24, 1914, the Interstate Commerce Commission commented on this as follows:

> The criticism made by the protestants of the property investment accounts of the carriers is well founded; but notwithstanding their imperfections these accounts afford a usable basis for a fairly satisfactory study of the course and tendency of the returns. The accounting rules made effective by the commission on July 1, 1907, required all entries in the property accounts of railways to be stated in terms of cash.

Growing partly out of these criticisms, and also because of a desire on the part of the public and many of the carriers, Congress passed the valuation act. Since 1913 a large organization of engineers and accountants, under the supervision of the Interstate Commerce Commission and in conjunction with similar organizations of the various railroads, have been engaged in developing and compiling data looking to an ultimate determination of railway value by that commission. The United States Government, through that commission, has expended on this work $23,000,000 and it is conservatively estimated that the railroad corporations have spent ap-

Digitized by Google

proximately $55,000,000 for their participation in the undertaking. The importance of the work can not be overestimated, and its completion should be expedited as much as possible, consistent with proper and efficient conduct of the work.

In the rate proceedings before the Interstate Commerce Commission known as Ex parte 74, preliminary to the advances in rates allowed in August, 1920, that commission's bureau of statistics compiled figures showing the total investment in road and equipment of the railways, including materials and supplies on hand, but excluding cash and other working capital, as reported by the carriers as of December 31, 1919, to be $20,040,572,611. The Interstate Commerce Commission did not accept these figures as the basis for its conclusion, but fixed the sum of $18,900,000,000 as the fair value of railway property at that time, to be used as a tentative basis for rate-making purposes, until such time as further progress had been made in the valuation proceedings.

It is understood that the Interstate Commerce Commission's figure is the result of calculations based upon such data as had been collected under the provisions of the valuation act, supplemented by other investigations which it had made. Mr. Commissioner Hall, in his statement before the Senate Committee on Interstate Commerce on January 5, 1922, in this connection said:

> All of the results produced by years of work on the part of the Bureau of Valuation were utilized, both as to particular roads and as to general tendencies and principles. These data covered (*a*) information as to the original cost of the property, (*b*) cost of reproduction new, (*c*) the accrued depreciation, (*d*) the amount of the investment, (*e*) the corporate histories of the properties, (*f*) the values of the lands; and (*g*) other values and elements of value, if any. Those were found in the working papers in our Bureau of Valuation, which had accumulated during this period of time.
>
> We utilized the results of the work of the bureau not only in cases where reports from the engineering, land, and accounting sections were all completed, or work being done by sections, but where substantial completion had been reached in the work of any of these divisions. Some idea of the magnitude of this special task of compilation may be had from the fact that 572 employee-days service were performed in the Bureau of Valuation in this phase of the work.
>
> We also had before us the investment accounts of the carriers. Since 1907 these have been considerably policed by us with the force at our disposal.

Sound credit enables the railroads to provide adequate service and facilities. The soundness of railroad credit depends upon earning a reasonable return upon value of the property put to public use, to attract the new investment needed to increase transportation service and facilities. Such service and facilities must be enlarged and improved, so as to keep pace with the growth of the country and its business expansion. The transportation act of 1920 authorized the Interstate Commerce Commission to establish rates so as to produce a fair return on the aggregate value to be determined by the latter commission of the railway property of the carriers held for and used in the transportation service. Acting under that authority the Interstate Commerce Commission fixed such rates as it is expected would produce the return specified in the transportation act, of not exceeding 6 per cent for the railroads in groups, for the two years ending March 1, 1922; because of a decrease in traffic that expectation unfortunately was not realized.

Digitized by Google

Congress, in passing the transportation act, had the stabilizing of railroad credit in mind when it provided that rates should be so fixed as to produce a definite return upon aggregate railway value. This rate of return after March 1, 1922, is to be fixed by the Interstate Commerce Commission from time to time, and in making its determination the transportation act requires it to give consideration to the transportation needs of the country and the necessity for enlarging the transportation facilities in order to provide the people of the United States with adequate transportation.

In its report (to accompany S. 3288) dated November 10, 1919, the Senate Committee on Interstate Commerce said:

> As commerce increases in volume the facilities of transportation must increase, and without reckoning the funds which must be secured to discharge maturing obligations already in existence it will be conceded by everybody that immense sums will be required from year to year for new construction, additional equipment, and necessary improvement. The capital thus demanded must be drawn from those who have money to invest, and of course it must be voluntarily contributed. If the people who have money will not invest it in the transportation enterprise, private ownership and operation under public control must necessarily fail. It is apparent, therefore, that any legislation which may be proposed upon the hypothesis of private ownership and operation must tender to the future investor reasonable security for the investment he is asked to make and reasonable assurance of such yearly return upon his money as will induce him to enter the field. The better the security and the more certain the return the less will be the rate required to attract the investment.

Not only has the necessity of a reasonable rate of return as vital to railway credit been recognized by Congress, but has been clearly stated as well by the Interstate Commerce Commission as follows (decision of July 29, 1914, No. 5860, Investigation and Suspension Docket No. 333):

> It is not only consistent with a national policy that invites the private ownership of railroads that there should be a liberal return on a particular railroad investment when the property has been wisely planned and honestly constructed and is efficiently managed, but the full development of that policy as well as justice required that such return should be made. The public interest demands not only the adequate maintenance of existing railroads, but a constant increase of our transportation facilities to keep pace with the growth and requirements of our commerce. If such development is to be accomplished with private capital in conformity with our traditions, nothing can be more certain than that the facilities will not be provided except under such a system of regulation as will reasonably permit a fair return on the money invested.

A statement is submitted, Table C1, giving the property investment as reported to the Interstate Commerce Commission by the carriers, the net operating income (that is, the funds available for interest, dividends, and surplus or margin), and the rate of return.

In 1921 the amount earned upon the value tentatively fixed by the Interstate Commerce Commission was less than 3½ per cent, which was the lowest return earned since 1897, excepting during the years 1919 and 1920, which were affected by postwar conditions. Out of that return the railroads must pay interest, dividends, and other charges.

Digitized by Google

TABLE C1.—*Property investment (book value), railway operating income and net railway operating income, 1908–1920, steam roads, excluding switching and terminal companies.*

Year ended—	Investment[1] (book value).	Railway operating income.[2]	Net railway operating income.[3]	
			Amount.	Return on investment (book value).
June 30—				*Per cent.*
1908	$13,213,766,540	$645,680,235	$628,912,932	4.76
1909	13,609,183,515	732,642,083	705,084,592	5.18
1910	14,557,816,099	826,466,756	799,336,033	5.49
1911	15,612,378,845	768,213,345	739,016,747	4.73
1912	16,004,744,966	751,266,806	721,185,107	4.51
1913	16,588,603,109	831,343,282	801,106,512	4.83
1914	17,153,785,568	705,883,489	673,329,793	3.93
1915	17,441,420,382	727,546,101	691,161,343	3.96
1916	17,689,425,438	1,043,017,290	999,940,599	5.65
Dec. 31—				
1916	17,842,776,668	1,100,545,422	1,055,474,550	5.92
1917	18,574,297,873	986,819,181	946,833,851	5.10
1918	18,984,756,478	682,546,759	642,162,617	3.38
1919	19,300,120,717	510,365,083	449,173,544	2.33
1920	19,839,276,119	69,819,830	[4] 20,500,000	.10

[1] Figures for investment are those taken from the annual reports of the carriers and do not include property investment of some proprietary companies which do not render annual reports, notably the proprietary road in the Baltimore & Ohio system. They also include some duplications in the Atchison, Topeka & Santa Fe system. If these facts were taken into account, the total shown for 1919 would be increased to approximately $19,565,646,681. This excludes the investment of switching and terminal companies amounting to $502,135,624. Foregoing investment does not take into account material and supplies and working capital, which as of Dec. 31, 1920, amounted to approximately $765,000,000 for material and supplies and $550,000,000 for working capital. If these elements of investment are taken into account, the total for 1920 would be increased from $19,839,276,119 to $21,154,000,000.

[2] "Railway operating income" for 1918 and 1919 includes deficits of $47,067,926 and $156,908,053, respectively, representing operating expenses, taxes, etc., from corporate reports of railways under Federal control.

[3] "Net railway operating income" is railway operating income (revenues less expenses and taxes) less debit balance of hire of equipment and joint facility rentals.

[4] Partially estimated.

RELATION OF RAILROAD CREDIT TO INDUSTRY.

The railroads are one of the largest consumers, taxpayers, and employers of labor, but these low returns prevent them from promoting prosperity and providing adequate facilities, improvements, and equipment until that situation is improved.

Considering the present obligations resting upon the Government and upon the country at large, and as a matter of economic policy, new money for railroad improvement should not be raised through constant Government aid. The Government should not be called upon to guarantee that the principal of railroad securities is safe and that the interest and dividends thereon will be regularly paid. In the public interest the railroad industry must rest upon its own foundations, and its revenues must be so constructively regulated that their operations will produce enough to pay fair wages, cost of materials, taxes, meet the fixed charges, pay a fair dividend, and leave a small margin to attract investors of new capital. In other words, to obtain new railroad capital, the opportunities to earn and pay regular returns must exist, and railroad managements must be encouraged to exercise the greatest initiative in improving and extending transportation facilities. Furthermore, conditions should

Digitized by Google

be created whereby the sale of capital stock by the principal roads will become possible and the continued increase in funded debt will be minimized.

PROPER RELATION BETWEEN STOCK AND BONDS SHOULD BE PRESERVED.

In considering the question as to what return railway companies should be allowed to earn, it should be remembered that in the structure of railway credit a proper relation should be preserved between stock and debt. For the last few years it has not been possible for most of the companies to do any financing through the sale of stock. (See Table C2.) The moneys which they have raised for the most part come from the sale of bonds or from the issuance of some other form of evidences of indebtedness. This method of financing can not be indefinitely continued. Railroads can not go on constantly increasing their indebtedness and not building up an equity in their properties underlying their debt. When the investor thinks that too large a percentage of the value of the property of a given company is represented by debt and not enough by stock, he will decline to buy further bonds of that company, or if he takes them it will be only at an unduly high interest rate. It is important, therefore, that railroad credit should be so strengthened as to enable a properly capitalized, well-managed company with adequate traffic to do its financing through issues of stock. Stock, being junior to debt, and having no lien on the property or equipment, naturally must bring a larger return in order to be attractive.

TABLE C2.—*Railway capital actually outstanding and net income, 1908–1920, steam roads, excluding switching and terminal companies.*

Year.	Total railway capital.	Funded debt.	Stock.	Ratio of debt to capital.	Net income.	Ratio of net income to stock.
June 30—				*Per cent.*		*Per cent.*
1908	$16,198,731,489	$8,897,992,216	$7,300,739,273	54.9	$443,986,915	6.08
1909	16,992,530,340	9,380,119,114	7,612,411,226	55.2	441,062,743	5.79
1910	17,774,426,871	9,763,696,861	8,010,730,010	54.9	583,191,124	7.28
1911	18,437,820,946	10,074,545,054	8,363,275,892	54.6	547,280,771	6.54
1912	18,989,345,476	10,436,898,200	8,552,447,276	55.0	453,125,324	5.30
1913	19,028,535,973	10,428,543,119	8,599,992,854	54.8	544,201,074	6.33
1914	19,401,083,881	10,746,868,639	8,654,215,242	55.4	395,631,642	4.57
1915	19,719,893,944	11,064,574,576	8,635,319,368	56.2	354,786,729	4.11
1916	19,681,193,092	10,938,086,453	8,743,106,639	55.6	671,398,243	7.68
Dec. 31—						
1916	19,630,610,082	10,875,206,565	8,755,403,517	55.4	735,341,165	8.40
1917	19,764,941,991	10,761,145,441	9,003,796,550	54.5	658,224,696	7.31
1918	19,453,273,003	10,606,556,489	8,846,716,514	54.5	442,336,131	5.00
1919	19,539,283,350	10,656,158,685	8,883,124,665	54.5	496,609,104	5.59
1920	20,122,608,364	11,288,201,395	8,834,406,969	56.1	465,030,251	5.26

The provisions of the transportation act which commit to the Interstate Commerce Commission control over issues of securities, of the building of new lines, and of the consolidation of companies are of great importance, and reflect appreciation of the fact that the regulation of the instruments of interstate commerce is a matter of national concern.

The transportation act as a whole is a most valuable piece of constructive legislation and gives promise of working out to the great

Digitized by Google

benefit of the country. It is unfortunate that its provisions went into effect at the beginning of a period of depression, because there was no opportunity for the railroads to build up any reserves such as contemplated in the act to carry them through a time when traffic was subnormal and expenses continued to be abnormal.

Certain changes in the act are suggested in other parts of this report, and other changes will undoubtedly from time to time be made as experience will show need for them. The relation of railroad wages and working conditions to railroad finance and credit is dealt with in another chapter of this report.

THE RECAPTURE PROVISION.

The transportation act provides that individual companies in a region which under the rates fixed by the Interstate Commerce Commission may earn a return greater than 6 per cent shall surrender half of the excess to the Government. This provision for surrender, or "recapture" has not been operating for a sufficient length of time to determine its value, and no funds have thus far accrued to the Public Treasury.

RAILROAD TAXATION.

Attention is directed to the burdens placed upon transportation by taxation levied by Federal, State, and municipal authorities. The public have now been relieved of special taxes upon freight and passenger transportation, which for 1920 approximated $253,000,000. The railroad companies, however, are assessed a tax upon income.

In 1916 1,147 steam-railroad corporations, with net income of $798,505,481, paid $15,628,776 corporation income tax. In 1918 300 steam-railroad corporations, with net income of $290,591,122, paid $34,160,415 income tax and $2,507,529 war-profits and excess-profits tax, a total of $36,667,944. In 1918 229 steam-railroad corporations reported a deficit of $22,412,892 and paid no tax. Effective January 1, 1922, the normal tax on income of the railroad companies was increased from 10 per cent to 12½ per cent.

New and varied forms of taxation are constantly being levied; some of them are intended to reach railroads to the exclusion of other forms of business. Railroads should, of course, pay proper amount of taxes, but it must be remembered that whatever they pay must be passed on to the public through rates.

There has been a heavy increase in the amount of taxes paid by the railroads. Tables B1 and B2 and chart B1 indicate the amount of Federal and State taxes paid annually by Class I railroads since 1911, the per cent of increase annually, and the per cent of increase over 1911 or 1913. In 1911 the total of both Federal and State taxes was $98,626,848; in 1920 this had reached $271,910,509; an increase of 175.7 per cent. Of the 1920 taxes, $48,619,308 were Federal and $223,291,201 State taxes. The total taxes paid in 1921 approximated $276,724,000. After paying taxes and operating expenses in 1921, there remained but $600,406,000 to pay a return on the tentative valuation of $18,900,000,000 as found by the Interstate Commerce Commission.

Digitized by Google

The cost of financing the railroads, as well as the farms and industries of the country, is increased by the large issues of tax-free securities, which result in the absorption of credit for these purposes, thus diminishing the supply of credit for railroads and other industries whose securities are not tax free, and increasing the interest rate at which other securities can be sold.

RAILWAY EXPANSION NECESSARY.

The transportation systems must be continually improved to keep pace with industrial progress. It is possible to cheapen transportation through intensive development such as electrification, improvement of rolling stock and other equipment, and the use of the most modern methods in the loading of trains. This country has enjoyed railroad transportation on a cheaper basis than practically any other civilized country in the world, but can not continue to do so by restricting initiative or by undue limitation of railroad profits earned under uniform and reasonable rates.

To help bring about such a condition, the transportation act authorized the loaning of a reasonable amount of money to the railroads, under the supervision of the Interstate Commerce Commission, so as to enable them to arrive at a more stable basis following the close of the war. These are short-term loans, and the interest and principal thereon must be regularly paid by the railroads. Under this provision of the act about $263,000,000 have been loaned. In view of other national requirements, the policy of government finance is not a desirable fixed policy.

Under the transportation act the return is computed on a tentative valuation determined by the Interstate Commerce Commission, and not upon the valuation of railroad stocks and bonds. For that purpose, the commission is required to fix rates so that the carriers in rate groups and territories will, under efficient management and reasonable expenditures for maintenance, earn a fair return upon the aggregate value of the railway property of such carriers held for, and used in the service of, transportation and, as already stated, the commission determines such aggregate value of the property of the carriers. In addition, the commission also regulates new issues of stocks or bonds, construction of new lines and facilities, and the leasing or consolidation of existing lines. This is all helpful in the interest of the public, because it assures that a return is not paid on any watered stock, but only on the value determined by the Interstate Commerce Commission.

The production of the principal products of the country increases on the average from 3.6 to 4 per cent per annum, and the traffic units consisting of the combined ton mileage and passenger mileage of the railroads increased on the average between 6 and 7 per cent per annum since 1908. In periods of prosperity these increases are substantially exceeded, but the transportation service of the country needs an increased yearly investment to finance additional tracks, stations, equipment, and facilities to take care of this growth. While it is generally stated that a billion dollars a year ought to be provided to finance railway extensions, new equipment, and improve-

Digitized by Google

ments, the actual experience since 1908 is that the property investment of the railroads has increased on an average of only $540,000,000 per annum. However, in view of the fact that prices of material and labor have increased and that increased railroad property investment has been restricted for several years, at least $750,000,000 per annum should be spent for several years for the foregoing purposes.

An important consideration in this connection is that the capital funds of the country loaned by the investors and the banks is the surplus derived from the enterprise, thrift, and sacrifices of all hard-working, prudent citizens and conservatively managed corporations, and is a species of general reservoir from which all forms of industry must draw. It is important to the agricultural industry, which depends on that reservoir in the same way as the railroad industry, that the rate of interest should not be unduly raised to the railways because of reduced net earnings, or because of large issues of tax-free securities. If the interest rate to the railways rises, the interest rate to the farmer will also increase, for the capital market is on a competitive basis, and what affects the interest rate for one industry affects the rate for all industries. In this emphatic way does the interdependence of all industry, in our highly complex economic system, disclose itself.

TABLE C3.—*Statement showing the market value of American railways.*

[Based on market quotations for the week ending Jan. 14, 1922.]

	Eastern district.	Southern district.	Western district.	Total.
(*a*) Total railway capital, Dec. 31, 1919	$8,071,435,197	$3,299,540,098	$10,150,741,296	$21,521,716,591
(*b*) Held by reporting companies	1,711,758,157	701,028,362	2,169,404,550	4,582,191,069
(*c*) Outstanding, in hands of the public	6,359,677,040	2,598,511,736	7,981,336,746	16,939,525,522
(*d*) Par value of capital in hands of the public on which quotations were obtained	4,019,997,916	1,755,366,139	5,198,643,348	10,974,007,403
(*e*) Amount of capital in hands of the public on which quotations were not obtained	2,339,679,124	843,145,597	2,782,693,398	5,965,518,119
(*f*) Market value of securities on which quotations were obtained	2,714,881,174	1,212,977,366	3,496,618,619	7,424,477,159
(*g*) Market value	5,054,560,298	2,056,122,963	6,279,312,017	13,389,995,278

Authorities: (*a*), (*b*),[1] and (*c*), text of the Thirty-third Annual Report on the Statistics of Railways in the United States for the year ended Dec. 31, 1919, pp. 32 and 33; (*d*) compiled from information shown in Poor's Manual of Railroads; (*f*) compiled from quotations shown in the Commercial and Financial Chronicle, of New York, issue of Jan. 14, 1922.

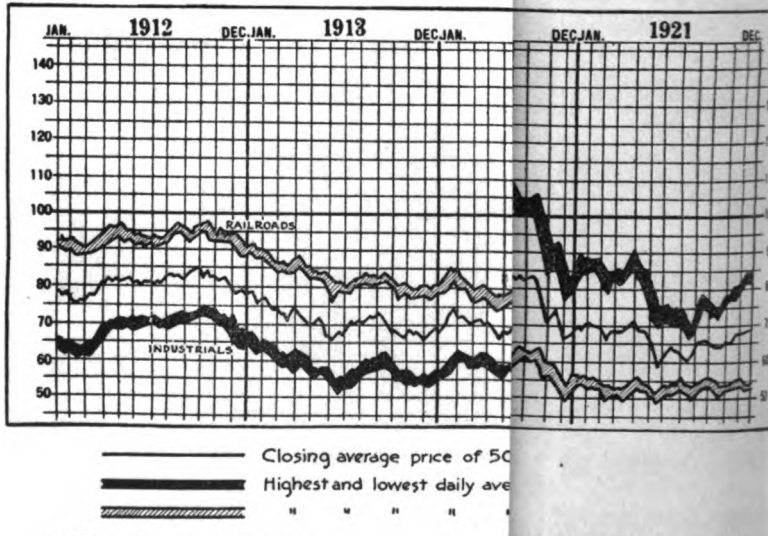
[1] Of the total, $4,399,864,462 for class I, II, and III carriers and $114,202,057 for switching and terminal companies was not assigned to districts in the report of the Interstate Commerce Commission and has been assigned to districts on basis of relationship shown by total railway capital.

NOTES.—In arriving at the market value we took all stocks and bonds of class I carriers which were outstanding in the hands of the public, as shown by Poor's Manual of Railroads; we then applied the mean of the high and low market price of stocks and the mean of the weekly range of bond prices, or the last sale price if subsequent to Aug. 1, 1921, where no quotation was shown for the week ended Jan. 14, 1922. All quotations used were those on the New York Stock Exchange for the week ended Jan. 14, 1922, as published in the Commercial and Financial Chronicle. In the aggregate we were able to find quotations on 66 per cent of the capitalization in the hands of the public.

The total above should be increased $381,649,957 and also by other securities since Dec. 31, 1919 (not refunding), which figures are being compiled by the statistician of the Interstate Commerce Commission, and decreased by securities maturing since Dec. 31, 1919, which were not refunded.

Digitized by Google

Digitized by Google



Digitized by Google

TABLE C4.—*Statement showing a comparison of investment in road and equipment with railway capital outstanding not held by railway companies.*

	Investment in road and equipment.	Increase or decrease over—		Not held by railway companies.	Railway capital outstanding, increase or decrease over—	
		Previous year.	1890		Previous year.	1890
1890	$7,755,387,381			$7,577,327,615		
1891	8,738,533,165	$983,145,784	$983,145,784	8,007,989,723	$430,662,108	$430,662,108
1892	8,554,394,930	[1] 174,138,335	809,007,449	8,294,689,760	286,700,037	717,362,145
1893	8,937,545,760	373,150,930	1,182,158,379	8,331,003,006	36,913,246	754,275,391
1894	9,073,470,532	135,924,772	1,318,083,151	8,646,600,008	314,997,002	1,069,272,393
1895	9,203,490,619	130,020,087	1,448,103,238	8,899,572,695	252,972,687	1,322,245,080
1896	9,500,327,733	296,837,114	1,744,940,352	9,065,518,857	165,946,162	1,488,191,242
1897	9,709,329,228	209,001,495	1,953,941,847	9,168,071,898	102,553,041	1,590,744,283
1898	9,760,581,424	51,252,196	2,005,194,043	9,297,167,776	129,095,878	1,719,840,161
1899	9,961,840,805	201,259,381	2,206,453,424	9,432,041,731	134,873,955	1,854,714,116
1900	10,263,313,400	301,472,595	2,507,926,019	9,547,984,611	115,942,880	1,970,656,996
1901	10,405,095,085	141,781,685	2,649,707,704	9,482,649,182	[1] 65,335,429	1,905,321,567
1902	10,658,321,376	253,226,291	2,902,933,995	9,925,664,171	443,014,989	2,348,336,556
1903	10,973,504,903	315,183,527	3,218,117,522	10,281,598,305	355,934,134	2,704,270,690
1904	11,511,537,131	538,032,228	3,756,149,750	10,711,794,078	430,195,773	3,134,466,463
1905	11,951,348,949	439,811,818	4,195,961,568	11,167,105,992	455,311,914	3,589,778,377
1906	12,420,287,938	468,938,989	4,664,900,557	11,671,940,649	504,834,657	4,094,613,034
1907	13,030,344,328	610,056,390	5,274,956,947	[2]	[2]	[2]
1908	13,213,766,540	183,422,212	5,458,379,159	12,833,591,510	1,161,650,861	5,256,263,895
1909	13,609,183,515	395,416,975	5,853,796,134	13,711,867,733	878,276,223	6,134,540,118
1910	14,387,816,099	778,632,584	6,632,428,718	14,338,575,940	626,708,207	6,761,248,325
1911 [3]	15,195,262,625	807,446,536	7,439,875,254	15,008,707,570	670,131,630	7,431,379,955
1912 [3]	15,874,579,626	679,316,991	8,119,192,245	15,087,600,650	78,893,080	7,510,273,035
1913 [3]	16,351,639,366	477,059,640	8,596,251,885	[3] 15,330,131,446	242,530,796	7,752,803,831
1914 [3]	16,936,697,840	585,058,574	9,181,310,459	[3] 15,719,696,925	389,565,479	8,142,369,310
1915 [3]	17,247,101,881	310,404,041	9,491,714,500	16,307,502,580	587,805,655	8,730,174,965
1916 [3]	17,525,576,908	278,475,027	9,770,189,527	16,336,300,429	28,797,849	8,758,972,814
1916 [3]	17,681,126,339	155,549,431	9,925,738,958	16,332,578,328	[1] 3,722,101	8,755,250,713
1917 [3]	18,423,235,159	742,108,820	10,667,847,778	16,401,786,017	69,207,689	8,824,458,402
1918 [3]	18,841,661,897	418,426,738	11,086,274,516	16,454,339,035	52,553,018	8,877,011,420
1919 [3]	19,168,081,681	325,419,784	11,412,694,300	16,550,310,683	95,971,648	8,972,983,068

[1] Decrease.
[2] Not available.
[3] Class I and II roads and their nonoperating subsidiaries accrued depreciation not deducted.

NOTE.—Fiscal years from 1890 to 1916; calendar years 1916-1919.

Table C3 gives an approximation of the market value of railroad securities in the hands of the public as of January 14, 1922.

The fundamental basis of market value is the earning capacity of the stocks and the value underlying the stock issue. The basis of the market value of bonds is the value of the property and the interest rate. The market value of both stocks and bonds is influenced by earning capacity, efficiency of management, and other factors.

The market value, affected as it is by so many diverse factors, may temporarily represent an amount either greater or less than the intrinsic value of the property.

Table C4 indicates a comparison of the investment in road and equipment of Class I and II roads, with the accrued depreciation of their nonoperating subsidiaries not deducted; and further indicates the railroad securities held by others than the railroad companies themselves.

Chart C1 indicates the range of average prices of 25 industrial stocks and 25 railroad stocks on the New York Stock Exchange for the years 1912 and 1921.

SUGGESTIONS.

As features of our national railway policy this commission finds:—

1. That the means of transportation be made self-sustaining to the greatest possible extent.

Digitized by Google

2. That in order to stabilize railroad credit the railroads should earn a fair return upon the value of their property devoted to public use. That return should be sufficient to enable them to sustain the value of their properties put to public use, and to attract the funds required for the extension and improvement of their property, facilities, and service.

3. That railroad taxation should, in view of the strict regulation imposed upon the railroads, be on an equitable basis, so that railroad rates may be reduced when possible, and railroad credit strengthened when conditions justify, and thereby help to stop the present abandonment of railroad mileage and encourage new construction.

4. That new capital is constantly needed by the railways, which should be raised to a greater extent by stock issues than in recent years.

5. That the issue of tax-free securities by the Federal, State, and municipal governments be reduced to the smallest possible limits, so that taxation can be reduced, and capital funds be allowed to increase for the use at fair interest rates by agriculture, industry, and the railroads, and thereby help to promote prosperity.

Digitized by Google

Chapter V.

RAILROAD EXPRESS COMPANIES.

The railway express companies perform a necessary and valuable service to the public. In a general way the traffic handled consists of highly perishable food supplies requiring fast and dependable transportation, package freight consisting of the lighter forms of merchandise, as well as what may be termed emergency shipments of various articles requiring fast transportation. Tonnage handled by the express companies is transported in passenger-equipped cars and passenger trains or in solid express trains moving on passenger-train schedules.

Prior to July 1, 1918, the railway express business of the country was handled by eight principal express companies, and while each of these companies in a general way occupied the territory served by separate railroad lines, they were in competition with one or more companies in a portion or perhaps all of their territory. On July 1, 1918, under an order of the Director General of Railroads, the express operations of the express companies were merged into one company called the American Railway Express Co. This company operated without railway-express competition until May 1, 1921, on which date the Southeastern Express Co. started operation, the activities of the latter being confined principally to the Southern Railway system and its allied lines, including the Mobile & Ohio Railroad.

The statistics available for the years prior to the consolidation in 1918 include combined data for the several operating companies. Subsequent to July 1, 1918, the data covers only the operation of the American Railway Express Co. except as otherwise noted in the tables constituting a part of this report.

Digitized by Google

TABLE E1.—*Property investment of railroad express companies.*

[Statement showing for all express companies, original cost, accrued depreciation, and book value of real property and equipment for the years 1912 to 1920, inclusive, and also as of Oct. 31, 1921, for the American Railway Express Co.]

	June 30, 1912.[1]		June 30, 1913.[2]		June 30, 1914.[3]		June 30, 1915.[3]		June 30, 1916.[4]		Dec. 31, 1916.[4]	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Land												
Buildings on land owned		$16,011,536		$16,066,578		$16,446,269		$15,739,086		$17,488,496		$18,055,847
Buildings on land not owned												
Cars	123	371,908	155	584,625	155	603,787	147	610,992	202	833,102	215	894,718
Trucks								1,172,687		1,310,930		1,486,844
Office furniture and fixtures		3,620,387		4,136,928		4,470,759		2,481,102		2,586,482		2,713,029
Office safes								844,934		780,489		792,195
Horses	19,697	3,787,592	19,836	4,012,039	18,494	3,849,555	16,875	3,405,095	18,787	4,028,693	19,879	4,176,452
Automobiles	595		1,244		1,335		1,409	3,389,120	1,789	4,376,347	2,230	5,519,550
Wagons, sleighs, and buggies	18,109	4,591,788	18,751	6,531,256	18,457	6,708,173	17,422	2,868,859	17,451	3,083,749	17,795	3,203,230
Stable equipment								35,901		29,810		33,606
Harness equipment		702,870		729,224		761,395		506,224		525,313		560,394
Garage equipment								98,260		133,785		158,818
Line equipment		816,660		880,007		889,202		830,741		884,394		884,830
Shop equipment								77,792		91,208		97,429
Miscellaneous equipment		362,031		459,416		264,974		5,535		13,163		20,311
Total		30,264,772		33,400,073		33,994,114		32,066,328		36,165,961		38,597,253
Accrued depreciation		3,312,014		5,066,295		6,351,680		6,736,232		9,312,279		10,852,724
Book value		26,952,758		28,333,778		27,642,434		25,330,096		26,853,682		27,744,529

Digitized by Google

	Dec. 31, 1917.[1]		Dec. 31, 1918.[2]		Dec. 31, 1919.[3]		Dec. 31, 1920.[3]		Oct. 31, 1921.[4]	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Land		$20,811,830		$5,007,904		$4,934,818		$5,002,597		$4,927,790
Buildings on land owned				11,696,462		12,051,034		12,146,954		9,339,841
Buildings on land not owned										2,798,008
Cars	256	1,105,693	256	1,108,601	256	1,118,352	256	1,118,352	255	[7] 1,114,171
Trucks		1,716,357		1,974,486		2,155,247		2,252,525		2,357,801
Office furniture and fixtures		3,031,483		3,263,288		3,676,679		3,916,617		4,041,548
Office safes		814,075		796,571		800,396		777,619		781,245
Horses	19,986	4,323,519	19,674	4,339,497	19,976	4,438,764	19,874	4,449,571	17,728	3,949,743
Automobiles	2,886	7,010,458	2,950	7,410,093	3,029	7,696,795	3,080	7,883,887	3,212	8,346,204
Wagons, sleighs, and buggies	18,470	3,440,641	17,708	3,516,982	18,039	3,795,439	17,984	3,974,597	17,943	4,064,063
Stable equipment		39,244		35,388		37,090		37,856		40,397
Harness equipment		601,644		608,712		689,366		738,639		708,808
Garage equipment		172,597		182,168		196,060		180,042		164,779
Line equipment		939,164		918,814		956,156		917,462		915,739
Shop equipment		117,376		160,748		288,836		277,897		347,689
Miscellaneous equipment		36,692		37,275		1,391,792		1,222,370		1,086,263
Total		44,160,773		41,074,989		44,186,824		44,896,985		44,984,064
Accrued depreciation		12,436,792		12,142,478		14,306,554		16,373,192		17,740,518
Book value		31,723,981		28,932,511		29,880,270		28,523,793		27,243,566

[1] Includes property of Adams, American, Canadian, Canadian Northern, Globe, Great Northern, National, Northern, Southern, United States, Wells-Fargo & Co., and Western Express Cos.

[2] Includes property of Adams, American, Canadian, Canadian Northern, Globe, Great Northern, Northern, Southern, United States, Wells-Fargo & Co., and Western Express Cos.

[3] Includes property of Adams, American, Canadian, Globe, Great Northern, Northern, Southern, Wells-Fargo & Co., and Western Express Cos.

[4] Includes property of Adams, American, Canadian, Great Northern, Northern, Southern, Wells-Fargo & Co., and Western Express Cos.

[5] Includes property of the American Railway Express Co.; also the property of the Great Northern, Northern, and Western Express Cos. leased to and used by the American Railway Express Co.

[6] Includes property of the American Railway Express Co.

[7] Includes 6 automobile cars and 249 refrigerator cars.

Digitized by Google

Table E1 gives the property investment. This statement includes all of the real property and equipment of the express companies used in express operations segregated under the several pertinent classes. The book value of the property used by the several express companies in June, 1912, aggregated $26,952,758; the book value of the property used by the American Railway Express Co. as of October 31, 1921, aggregated $27,243,566. The capitalization of the American Railway Express Co. is $34,642,000, all of which has been issued and is outstanding. In addition to the investment in real property and equipment, the express company holds contracts with the several railroads which represent an asset of considerable value. The real property owned consists of buildings occupying land owned as well as land under lease. These buildings are used in the conduct of the express business as warehouses, stations, stables, garages, and other necessary utilities.

The express company uses equipment and station facilities belonging to the railway companies. The American Railway Express Co., however, owns 6 automobile cars and 249 refrigerator cars, all of which are equipped for passenger-train operation. The refrigerator cars are used to move perishables between various sections of the country, and in addition to these cars the express company under its contracts with the railroads makes use of refrigerators and other equipment belonging to the railroads for the movement of traffic throughout the country.

Table E2 gives the income account and dividend payments of express companies for the years from July 1, 1911, to October 31, 1921. It will be seen that the express privileges (payments to the railroad for transportation facilities furnished) have in years prior to September 1, 1920, been slightly in excess of 50 per cent of the total revenue from transportation. Up to September 1, 1920, the payments to the railroads were made on a fixed percentage of gross revenue; the balance was retained by the express company out of which to pay its operating expenses for loading and unloading at stations, care in transit, warehouse, and handling from shipper's place of business to express office, and corresponding delivery to consignees and other operating expenses and taxes. Since the execution of the uniform express contract, effective September 1, 1920, the division of revenues has been on the basis of allowing the express company its cost of operation, plus 2½ per cent of the difference between operating expenses and gross revenue, the balance remaining being apportioned among railroads for transportation facilities furnished.

The express company makes delivery to the store or house in practically every city, and many villages in the country, covering in all cases the entire business district, and frequently portions of the residential districts. In the smaller towns and villages the delivery must be taken at the railroad station. Any consideration of the operating expense must include this service which the public considers most valuable, and which, without doubt, is one of the well-established customs of modern life.

The most prosperous year for the express companies within the period shown was the fiscal year of 1916, when the net corporate in-

Digitized by Google

come reached $13,081,186. During the years 1918, 1919, and 1920 the deficits were large, reaching $39,706,653 in 1920.

In the first 10 months succeeding the effective date of the present contract, September 1, 1920, the accounts of the express company show a net corporate income of $3,151,506. This, however, is not strictly comparable with the preceding period showing deficits, because it is shown that the payments to the railroads in 1920 were $34,349,129 less than the amount the former basis would have produced when 50¼ per cent of the gross revenues of the express companies were paid to the railroad.

Labor being the chief item of expense, the commission has investigated and prepared tables showing the cost of supervision under the several general accounts, and the salaries and expenses of general officers. This data, together with percentage showing the relation of this item of expense to the revenue and to the total operating expenses, are given in Table E3.

Digitized by Google

TABLE E2.—*Income account and dividend payments of railroad express companies for period July 1, 1911, to Oct. 31, 1921, inclusive.*

[Figures for the period January to October, 1921, inclusive, taken from the books of the American Railway Express Co., do not include results from Southeastern Express Co.'s operations commencing May 1, 1921, for which figures are not available under the classification given herein.]

	Years ending—										10 months to Oct. 31, 1921.
	June 30, 1912.[1]	June 30, 1913.[2]	June 30, 1914.[2]	June 30, 1915.[3]	June 30, 1916.[4]	Dec. 31, 1916.[4]	Dec. 31, 1917.[4]	Dec. 31, 1918.[5]	Dec. 31, 1919.[6]	Dec. 31, 1920.[6]	
Total revenue from transportation	$156,685,662	$164,968,897	$154,886,042	$144,816,287	$173,709,412	$190,420,552	$222,860,373	$253,798,563	$285,938,752	$333,897,207	$246,417,978
Express privileges—Dr.	78,576,274	83,872,497	79,906,078	73,507,565	87,971,137	95,847,685	113,535,059	128,391,897	143,543,262	141,933,452	89,475,879
Total	78,109,388	81,096,400	74,979,964	71,308,722	85,738,275	94,572,867	109,325,314	125,406,666	142,395,490	191,963,755	156,942,099
Revenue from operations other than transportation	3,436,270	3,912,025	4,005,284	4,178,673	5,497,237	5,717,246	6,594,815	5,480,769	8,562,338	3,607,339	3,093,063
Operating revenue	81,545,658	85,008,425	78,985,248	75,487,395	91,235,512	100,290,113	115,920,129	130,887,435	150,957,828	195,571,094	160,035,162
Operating expenses:											
Maintenance	3,262,624	3,780,641	4,019,677	4,115,496	4,527,475	5,201,273	6,527,766	6,722,053	9,982,767	10,666,588	8,141,567
Traffic	1,226,167	1,431,488	1,394,094	713,281	759,107	831,883	925,033	494,663	244,630	304,406	369,470
Transportation—											
Office employees	19,599,485	21,508,524	20,693,628	19,094,324	21,121,220	24,645,065	32,272,795	45,656,557	53,991,843	80,010,961	52,407,106
Commissions	8,064,616	8,280,772	7,695,569	6,944,218	7,898,329	8,501,911	9,382,270	10,239,522	12,066,591	13,607,732	9,723,299
Vehicle employees	9,857,747	10,480,255	10,219,608	10,056,735	11,094,075	12,627,348	14,957,871	18,169,137	24,542,922	34,964,958	25,953,485
Stable and garage employees	1,277,229	1,279,311	1,285,949	1,147,656	1,118,726	1,202,384	1,469,619	1,831,749	2,707,563	3,851,447	3,116,324
Train employees	5,737,084	6,053,020	5,925,060	5,667,710	5,934,547	6,463,242	7,120,416	8,304,151	9,839,125	14,522,146	10,692,010
Other	18,798,440	20,414,392	20,231,297	18,770,754	20,847,857	23,987,488	33,380,753	49,836,853	54,294,000	68,573,806	35,734,302
General	5,402,290	5,987,304	5,757,112	5,019,806	5,790,737	6,214,792	7,684,534	6,242,773	6,548,957	8,389,824	10,355,866
Total operating expenses	73,255,682	79,215,707	77,221,994	71,529,980	79,092,073	89,675,386	113,721,057	147,497,458	174,218,398	234,891,868	156,493,429

Digitized by Google

Operating revenue or deficit	8,289,976	5,792,718	1,763,254	3,957,415	12,143,439	10,614,727	2,199,072	[8] 16,610,023	[8] 23,260,570	[8] 39,320,774	3,541,733
Deficit from outside operations	[8] 46,623	[8] 59,932	[8] 33,886								
Net operating revenue or deficit	8,243,353	5,732,786	1,729,368	3,957,415	12,143,439	10,614,727	2,199,072	[8] 16,610,023	[8] 23,260,570	[8]39,320,774	3,541,733
Uncollectible revenue				21,310	33,966	41,109	70,756	75,692	46,208	37,339	23,037
Taxes accrued	1,430,809	1,379,258	1,491,699	1,379,893	1,548,760	1,654,256	2,312,621	1,895,984	2,034,222	2,194,436	1,837,913
Operating income or loss	6,812,544	4,353,528	237,669	2,556,212	10,560,713	8,919,362	[8] 184,305	[8] 18,581,699	[8] 25,341,000	[8] 41,552,549	1,680,783
Other income	5,369,822	5,533,828	4,531,740	3,583,231	4,068,850	4,300,407	4,471,292	2,142,479	1,478,468	2,393,526	1,714,317
Gross income or loss	12,182,366	9,887,356	4,769,409	6,139,443	14,629,563	13,219,769	4,286,987	[8] 16,439,220	[8] 23,862,532	[8] 39,159,023	3,395,100
Deductions from gross income	1,237,996	1,276,466	1,269,688	1,305,614	1,548,377	1,599,316	1,538,581	1,042,985	196,141	547,630	243,594
Net corporate income or loss	10,944,370	8,610,890	3,499,721	4,833,829	13,081,186	11,620,453	2,748,406	[8] 17,482,205	[8] 24,058,673	[8] 39,706,653	3,151,506
Dividends declared out of income	4,625,832	4,679,824	2,986,250	2,228,065	2,238,044	1,988,824	2,508,044	719,022	43,000	32,250	1,558,890
Other appropriations of income	54,020	6,595				600,000					
Balance to profit and loss	6,264,518	3,924,471	513,471	2,605,764	10,843,142	9,031,629	240,362	[8] 18,201,227	[8] 24,101,673	[8] 39,738,903	1,592,616
Dividends declared out of surplus	2,823,785	3,172,056	2,577,683	1,553,340	5,581,895	13,189,223	1,596,190	1,016,474	100,000	90,000	692,840

[1] Includes income account of and dividend payments by Adams, American, Canadian, Canadian Northern, Globe, Great Northern, National, Northern, Southern, United States, Wells, Fargo & Co., and Western Express Cos.

[2] Includes income account of and dividend payments by Adams, American, Canadian, Canadian Northern, Globe, Great Northern, Northern, Southern, United States, Wells, Fargo & Co., and Western Express Co's.

[3] Includes income account of and dividend payments by Adams, American, Canadian, Globe, Great Northern, Northern, Southern, Wells, Fargo & Co., and Western Express Cos.

[4] Includes income account of and dividend payments by Adams, American, Canadian, Great Northern, Northern, Southern, Wells, Fargo & Co., and Western Express Cos.

[5] Includes income account of and dividend payment by Adams, American, Canadian, Great Northern, Northern, Southern, Wells, Fargo & Co., and Western Express Cos. for 6 months to June 30, 1918, and the American Railway Express Co. for 6 months to Dec. 31, 1918.

[6] Includes the income account of the American Railway Express Co. It also includes income and dividends of the Great Northern, Northern, and Western Express Cos., which were not engaged in express transportation business but whose property was under lease and used by the American Railway Express Co.

[7] Includes the income account of and dividend payments by the American Railway Express Co.

[8] Denotes deficit or losses.

Digitized by Google

TABLE E3.—*Supervision costs and ratios thereof to revenue from transportation and to total operating expenses of railroad express companies—Statement showing superintendence of maintenance, traffic and transportation, and salaries and expenses of general offices from July 1, 1911, to October 31, 1921, and ratios thereof to revenue from transportation and to total operating expenses.*

[Figures for the period to Dec. 31, 1920, are for all express companies as shown in annual reports of statistics of express companies issued by the Interstate Commerce Commission; figures for 10 months to Oct. 31, 1921, are for the American Railway Express Co. and do not include figures for Southeastern Express Co., which are not available.]

Year ending—	Superintendence of maintenance.			Superintendence of traffic.			Superintendence of transportation.			Salaries and expenses of general officers.		
	Amount.	Per cent of revenue from transportation.	Per cent of total operating expenses.	Amount.	Per cent of revenue from transportation.	Per cent of total operating expenses.	Amount.	Per cent of revenue from transportation.	Per cent of total operating expenses.	Amount.	Per cent of revenue from transportation.	Per cent of total operating expenses.
June 30, 1912	$52,784	0.03	0.07	$479,315	0.31	0.65	$3,029,444	1.94	4.14	$651,990	0.44	0.98
June 30, 1913	75,992	.05	.10	563,360	.35	.74	3,227,221	1.96	4.07	686,503	.42	.87
June 30, 1914	90,783	.06	.12	443,340	.29	.57	3,248,090	2.10	4.21	674,078	.44	.87
June 30, 1915	59,970	.04	.08	418,117	.29	.58	2,971,146	2.05	4.15	541,976	.37	.76
June 30, 1916	83,248	.05	.11	426,326	.25	.54	2,974,220	1.71	3.76	519,430	.30	.66
Dec. 31, 1916	89,716	.05	.10	435,492	.23	.49	3,226,623	1.69	3.60	521,564	.27	.58
Dec. 31, 1917	86,387	.04	.08	467,080	.22	.43	3,800,607	1.71	3.34	499,374	.23	.43
Dec. 31, 1918	113,457	.04	.08	250,383	.10	.17	4,493,082	1.77	3.05	414,358	.16	.28
Dec. 31, 1919	225,674	.08	.13	119,443	.04	.07	5,936,113	2.08	3.41	316,580	.11	.18
Dec. 31, 1920	223,096	.07	.10	132,961	.04	.06	6,854,988	2.05	2.92	343,265	.10	.15
10 months to Oct. 31, 1921	193,507	.08	.12	103,434	.04	.07	4,183,447	1.70	2.67	296,174	.12	.19

Digitized by Google

TABLE E4.—*American Railway Express Co.—Statement showing number of employee months on regular and temporary time, total wages, also payment for overtime, for the periods from October, 1919, to June, 1920, inclusive, and from July, 1920, to June, 1921, inclusive.*

	Nine months, October, 1919, to June, 1920, inclusive.			Twelve months, July, 1920, to June, 1921, inclusive.		
	Employee months.	Regular and temporary time.	Overtime.	Employee months.	Regular and temporary time.	Overtime.
Superintendence, maintenance, pay of clerks and attendants	84	$81,114.12	$1,854.55	69	$120,898.22	$1,211.64
Superintendence, traffic, pay of clerks and attendants	86	35,584.58	6,398.64	36	59,589.58	2,399.08
Advertising, pay of advertising staff	4	3,233.50	33.60	3	4,153.40	
Superintendence, transportation, pay of clerks and attendants	2,370	2,711,419.07	18,097.16	2,241	4,191,335.65	4,236.04
Office employees (local), pay of agents, clerks, and solicitors	24,095	21,018,638.19	1,039,698.65	23,269	35,930,502.32	659,955.17
Office employees (local), pay of platform men and house men	26,755	21,961,935.41	2,045,457.55	24,970	36,383,778.60	866,828.03
Vehicle employees	21,010	17,819,786.89	3,035,989.08	20,508	30,864,603.43	3,128,166.91
Stable employees	1,688	1,373,217.89	164,424.00	1,750	2,584,160.20	96,474.02
Garage employees	368	350,960.73	28,159.93	386	674,640.86	14,556.92
Loss and damage, pay of claim agents and clerks	2,068	1,987,506.33	32,842.12	1,829	3,013,864.40	20,313.44
General offices, salaries of clerks and attendants	3,359	2,809,482.58	118,120.46	5,162	7,775,645.12	157,482.99
Law department, salaries of clerks	47	46,370.97	27.00	40	71,453.35	55.00
Train messengers	8,656	7,808,799.46	592,947.09	7,768	13,887,552.73	542,547.68
Other train employees	1,747	1,374,517.57	85,532.58	1,556	2,502,394.23	88,621.79
Shops and stores, pay of employees	1,733	1,841,900.62	82,239.70	1,806	3,246,118.59	53,841.97
Total	94,015	81,228,297.86	7,239,320.11	91,393	141,310,690.18	5,636,239.68

Digitized by Google

Table E4 shows the situation with respect to the number of employees of the American Railway Express Co. and their aggregate compensation during nine months from October, 1919, to June 30, 1920, and during 12 months from July 1, 1920, to June 30, 1921. Similar data for the period prior to October, 1919, are not available.

The consolidation of the several express companies into one operating company has resulted in benefit to the shipping public. The situation during the latter part of 1917 and the early part of 1918 was so serious that it threatened that most of the then-existing express companies would be obliged to discontinue operations because of the rapidly increasing costs without a corresponding increase in revenues. During the period of Federal control from July 1, 1918, to February 29, 1920, the American Railway Express Co. operated under an agreement with the Director General of Railroads by which the express company was made whole—that is, it was guaranteed against loss. Under the provisions of the transportation act of 1920, accepted by the express company, this guaranty against loss was continued for the period of March 1, 1920, to August 31, 1920.

During both of these periods, while the express company did not sustain any loss for which it did not receive reimbursement from the Government, neither the agreement with the director general nor the transportation act of 1920 guaranteed the express company any return on its investment, the express transportation business having been conducted for these two periods without one dollar of return to its stockholders. As a result of the fact that the express company was made whole during the period from July 1, 1918, to August 31, 1920, and the execution of the new form of contract with the railroads, effective September 1, 1920, under which the railroads receive the balance of the express revenue (after payment of expenses and agreed return to the American Express Co.) in addition to the savings effected from unified operation, the American Railway Express Co. was enabled to continue the service with, however, reduced compensation to the railroads.

Since the consolidation an opportunity has been presented to compare unified operation with the operation of the several individual and competitive express companies. One of the principal benefits has been the saving in operating expenses. While this can not be clearly indicated until the deflation process has been terminated, it has been estimated that as a result of the consolidation an annual saving of approximately $14,000,000 has been effected.

The following table shows the ratio of operating expenses (not including the service and facilities furnished by the railroads) to gross earnings in the several groups, together with the total for the United States for the months of March, April, May, and June, 1921.

Operating expenses, per cent of gross earnings.

	Southern group.	Eastern group.	Western group.	Total.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
March, 1921	[1] 56	[1] 72	[1] 56	64
April, 1921	[1] 57	[1] 72	[1] 60	65
May, 1921	[2] 67	[1] 70	[1] 56	63
June, 1921	[2] 68	[1] 66	[1] 53	60

[1] One company. [2] Two companies.

Digitized by Google

Generally speaking, the express companies serve only that territory served by lines of steam railroad. In some cases their service is extended to inland waterways and to points along the lines of electric railroads and stage routes. In some cases, where the electric railways are in competition with the steam railways, the American Railway Express Co. has withdrawn its service from the electric lines in order to avoid duplication of service.

Digitized by Google

CHAPTER VI.

PARCEL POST.

HISTORY.

Parcel post as now conducted by the Post Office Department was established by law of August 24, 1912 (37 Stat., 557), redefining fourth-class mail matter and the rates of postage at which it is carried. The official recommendation of a parcel post is contained in the report of the Postmaster General for the year 1904, reading as follows:

With the establishment of rural mail delivery and the increasing extension of rural telephone service by private interests there has grown up a demand by the patrons of the rural service for the delivery of small packages of merchandise, such as foodstuffs, tobacco, dry goods, drugs, etc., on an order to the local merchant by postal card, telephone, or otherwise. The value of these packages of merchandise is usually small and the present rate of postage of 1 cent per ounce is practically prohibitive. The patron or merchant can not afford to pay 16 cents for the delivery of a pound of coffee or tobacco, or similar articles, but if a special rate were established on such matter from the distributing office for delivery to any patron on the rural routes from that office it would be a great convenience to the patron and become a source of revenue to the department.

It is therefore recommended for the consideration of Congress that a rate of 3 cents per pound, or any fractional part thereof, be authorized for packages of books or merchandise, not exceeding 5 pounds, mailed at the distributing post office of any rural free delivery route for delivery to a patron on said route. This rate should apply only to packages deposited at the local post office for delivery to patrons on routes emanating from that office and not to mail transmitted from one office to another. The rate of 3 cents per pound would be ample remuneration for the department, because there is no expense for railway transportation and the system by which these packages are to be delivered is already established and such delivery would entail no additional expense upon the department. A special stamp could be provided for this class of matter.

This recommendation of Postmaster General Wynne was renewed repeatedly by his successors until finally, as urged by Postmaster General Hitchcock in his report for 1911, modified to permit of a weight limit of 11 pounds to conform to that of the international parcel post, it took form through action of Congress in 1912.

ZONE DIVISION.

For purposes of parcel post the country was divided into eight zones, to be measured from each point of mailing as the radial center, as follows:

1. 50 miles.
2. 50 to 150 miles.
3. 150 to 300 miles.
4. 300 to 600 miles.
5. 600 to 1,000 miles.
6. 1,000 to 1,400 miles.
7. 1,400 to 1,800 miles.
8. Over 1,800 miles.

In addition, a differentiation designated as "local" was made for parcels to be delivered out of the post office at which mailed.

Digitized by Google

ORIGINAL RATES.

The rates of postage for fourth-class mail matter (previously 1 cent per ounce, and limited to 4 pounds) were fixed as follows:

Four ounces or less, 1 cent per ounce, any distance; more than 4 ounces, at pound rates for each pound or fraction thereof, according to distance; local, 5 cents a pound and 1 cent for each additional 2 pounds.

Zone No. 1: 5 cents a pound and 1 cent for each additional pound.
Zone No. 2: 5 cents a pound and 1 cent for each additional pound.
Zone No. 3: 7 cents a pound and 5 cents for each additional pound.
Zone No. 4: 8 cents a pound and 6 cents for each additional pound.
Zone No. 5: 9 cents a pound and 7 cents for each additional pound.
Zone No. 6: 10 cents a pound and 9 cents for each additional pound.
Zone No. 7: 11 cents a pound and 10 cents for each additional pound.
Zone No. 8: 12 cents a pound and 12 cents for each additional pound.

The limit of weight was 11 pounds, and the limit of size 72 inches of length and girth combined.

MODIFICATIONS.

The first modification, effective August 15, 1913, was to increase the limit of weight for the first and second zones from 11 pounds to 20 pounds, and to reduce the rates of postage for those zones. In March, 1914, books were added to the parcel-post classification, and seeds, plants, bulbs, etc., were accorded parcel-post zone rates. On July 1, 1914, the weight limit for the first and second zones was increased from 20 to 50 pounds, and for all other zones from 11 to 20 pounds; and the rates of postage were reduced in the third, fourth, fifth, and sixth zones. In July, 1915, the size was increased from 72 inches to 82 inches in length and girth combined. The limit of weight was further increased, effective March 15, 1918, from 50 pounds to 70 pounds to parcels mailed for delivery in the first, second, and third zones, and from 20 to 50 pounds for all other zones.

PRESENT RATES.

The present parcel-post rates are shown in Table F1.

TABLE F1.—*Parcel post rates.*

Weight in pounds.	Local.	First zone, 50 miles.	Second zone, 150 miles.	Third zone, 300 miles.	Fourth zone, 600 miles.	Fifth zone, 1,000 miles.	Sixth zone, 1,400 miles.	Seventh zone, 1,800 miles.	Eighth zone, all over 1,800 miles.
1	$0.05	$0.05	$0.05	$0.06	$0.07	$0.08	$0.09	$0.11	$0.12
2	.06	.06	.06	.08	.11	.14	.17	.21	.24
3	.06	.07	.07	.10	.15	.20	.25	.31	.36
4	.07	.08	.08	.12	.19	.26	.33	.41	.48
5	.07	.09	.09	.14	.23	.32	.41	.51	.60
6	.08	.10	.10	.16	.27	.38	.49	.61	.72
7	.08	.11	.11	.18	.31	.44	.57	.71	.84
8	.09	.12	.12	.20	.35	.50	.65	.81	.96
9	.09	.13	.13	.22	.39	.56	.73	.91	1.08
10	.10	.14	.14	.24	.43	.62	.81	1.01	1.20
11	.10	.15	.15	.26	.47	.68	.89	1.11	1.32
12	.11	.16	.16	.28	.51	.74	.97	1.21	1.44
13	.11	.17	.17	.30	.55	.80	1.05	1.31	1.56
14	.12	.18	.18	.32	.59	.86	1.13	1.41	1.68
15	.12	.19	.19	.34	.63	.92	1.21	1.51	1.80
16	.13	.20	.20	.36	.67	.98	1.29	1.61	1.92
17	.13	.21	.21	.38	.71	1.04	1.37	1.71	2.04

Digitized by Google

TABLE F1.—*Parcel post rates*—Continued.

Weight in pounds.	Local.	First zone, 50 miles.	Second zone, 150 miles.	Third zone, 300 miles.	Fourth zone, 600 miles.	Fifth zone, 1,000 miles.	Sixth zone, 1,400 miles.	Seventh zone, 1,800 miles.	Eighth zone, all over 1,800 miles.
18	$0.14	$0.22	$0.22	$0.40	$0.75	$1.10	$1.45	$1.81	$2.16
19	.14	.23	.23	.42	.79	1.16	1.53	1.91	2.28
20	.15	.24	.24	.44	.83	1.22	1.61	2.01	2.40
21	.15	.25	.25	.46	.87	1.28	1.69	2.11	2.52
22	.16	.26	.26	.48	.91	1.34	1.77	2.21	2.64
23	.16	.27	.27	.50	.95	1.40	1.85	2.31	2.76
24	.17	.28	.28	.52	.99	1.46	1.93	2.41	2.88
25	.17	.29	.29	.54	1.03	1.52	2.01	2.51	3.00
26	.18	.30	.30	.56	1.07	1.58	2.09	2.61	3.12
27	.18	.31	.31	.58	1.11	1.64	2.17	2.71	3.24
28	.19	.32	.32	.60	1.15	1.70	2.25	2.81	3.36
29	.19	.33	.33	.62	1.19	1.76	2.33	2.91	3.48
30	.20	.34	.34	.64	1.23	1.82	2.41	3.01	3.60
31	.20	.35	.35	.66	1.27	1.88	2.49	3.11	3.72
32	.21	.36	.36	.68	1.31	1.94	2.57	3.21	3.84
33	.21	.37	.37	.70	1.35	2.00	2.65	3.31	3.96
34	.22	.38	.38	.72	1.39	2.06	2.73	3.41	4.08
35	.22	.39	.39	.74	1.43	2.12	2.81	3.51	4.20
36	.23	.40	.40	.76	1.47	2.18	2.89	3.61	4.32
37	.23	.41	.41	.78	1.51	2.24	2.97	3.71	4.44
38	.24	.42	.42	.80	1.55	2.30	3.05	3.81	4.56
39	.24	.43	.43	.82	1.59	2.36	3.13	3.91	4.68
40	.25	.44	.44	.84	1.63	2.42	3.21	4.01	4.80
41	.25	.45	.45	.86	1.67	2.48	3.29	4.11	4.92
42	.26	.46	.46	.88	1.71	2.54	3.37	4.21	5.04
43	.26	.47	.47	.90	1.75	2.60	3.45	4.31	5.16
44	.27	.48	.48	.92	1.79	2.66	3.53	4.41	5.28
45	.27	.49	.49	.94	1.83	2.72	3.61	4.51	5.40
46	.28	.50	.50	.96	1.87	2.78	3.69	4.61	5.52
47	.28	.51	.51	.98	1.91	2.84	3.77	4.71	5.64
48	.29	.52	.52	1.00	1.95	2.90	3.85	4.81	5.76
49	.29	.53	.53	1.02	1.99	2.96	3.93	4.91	5.88
50	.30	.54	.54	1.04	2.03	3.02	4.01	5.01	6.00
51	.30	.55	.55	1.06					
52	.31	.56	.56	1.08					
53	.31	.57	.57	1.10					
54	.32	.58	.58	1.12					
55	.32	.59	.59	1.14					
56	.33	.60	.60	1.16					
57	.33	.61	.61	1.18					
58	.34	.62	.62	1.20					
59	.34	.63	.63	1.22					
60	.35	.64	.64	1.24					
61	.35	.65	.65	1.26					
62	.36	.66	.66	1.28					
63	.36	.67	.67	1.30					
64	.37	.68	.68	1.32					
65	.37	.69	.69	1.34					
66	.38	.70	.70	1.36					
67	.38	.71	.71	1.38					
68	.39	.72	.72	1.40					
69	.39	.73	.73	1.42					
70	.40	.74	.74	1.44					

PARCEL-POST STATISTICS.

For a short time after the inauguration of parcel post a special postage stamp was employed, permitting separation of parcel-post revenue from other postal revenue. But this was soon discarded, so that the revenue from fourth-class mail matter is represented in the sale of postage stamps indistinguishable from other mail classifications requiring postage stamps. The only statistical data disclosing the volume of business, weights of parcels, distances carried, and postage paid must therefore be found in the tests made from time to time, for 15-day periods, which, however, were interrupted during the war. These tests were made in April and October of the years 1914, 1915, and 1916, in April, 1917, and in October, 1919 and 1920, for representative post offices of all classes.

Digitized by Google

VOLUME OF PARCEL-POST BUSINESS.

The growth of the parcel post has been tremendous. It has been estimated from these tests of nearly 1,500,000,000 packages that the weight is approximately 5,000,000,000 pounds, and that the postage aggregates $150,000,000 a year.

WHAT TEST WEIGHINGS SHOW.

The summary of the 15-day test weighings is shown in Table F2, from which it will be noted that the number of parcels has increased from 17,148,200 to 55,352,860, an increase of 222.8 per cent, while the total weight has increased from 30,371,437 pounds to 169,641,199 pounds, or an increase of 458.6 per cent. The most startling comparison, however, is the increased average weight from 1 pound 12 ounces to 3 pounds 1 ounce, while there is a decrease in the average postage paid from 3.8 cents in 1913 to 3.2 cents in 1920.

TABLE F2.—*Comparative statement of parcels mailed at all post offices showing number, postage, weight, and average postage per pound.*

Total, all post offices.	Parcels mailed.	Postage on parcels mailed.		Weight of parcels mailed.		Average postage per pound.
		Total amount.	Average per parcel.	Pounds.	Average.	
	Number.				*Lbs. oz.*	
1913	17,148,200	$11,645,426.50	$0.069	30,371,437	1 12	$0.038
1914	36,303,670	2,119,410.17	.058	48,173,331	1 5	.045
1914	37,835,974	2,285,578.35	.061	54,653,137	1 7	.041
1915	41,217,184	2,451,254.94	.059	59,947,093	1 7	.041
1915	40,889,595	2,678,716.16	.066	68,372,635	1 11	.038
1916	41,980,516	2,962,134.88	.071	80,446,478	1 15	.038
1917	43,383,046	3,030,231.88	.070	80,131,264	1 14	.036
1919	41,067,236	4,763,497.37	.116	145,416,959	3 8	.032
1920	55,352,860	5,609,438.22	.101	169,641,199	3 1	.032

POSTMASTER GENERAL'S REPORTS.

The figures by zones show that the increase in the volume of business is greater for the more distant zones than in the near zones, and for the larger parcels as compared with the smaller ones. While cost statistics are indefinite, except for delivery where special agencies are utilized, and by automobiles employed exclusively for parcel post, the average cost is stated to be 5.2 cents per parcel; where delivered by horse-drawn vehicles, 2.8 cents; where delivered by other conveyances and by substitute carriers on foot, 4.5 cents. The percentage of parcel-post business which requires such delivery has increased from 21.8 per cent in April, 1913, to 38.1 per cent in October, 1920, while the percentage deliverable through regular agencies has decreased from 78.2 per cent in April, 1913, to 61.9 per cent in October, 1920. In computing average delivery costs the department assigns no expense to the 61.9 per cent of the total number of parcels delivered through regular city and rural carriers.

Digitized by Google

DEPARTMENT-STORE DELIVERIES.

One phase of the parcel-post development is found in its extension for local delivery service to department stores and retail merchants in certain cities, supplanting their own delivery systems, and in the transmission of shipments by mail-order houses which now utilize parcel post whenever to their advantage.

GARDEN TRUCK TRANSPORTATION.

Following an appropriation made by Congress, experiments were made to extend parcel-post service by country motor routes, "primarily as a means of expediting transportation of fourth-class mail between producing and consuming localities," with provision that existing methods of mail transportation should not be displaced. A report of these experiments, made to the Postmaster General under date of December 1, 1919, shows that during a period from July 1 to September 30, 1919, trucks operated on certain selected motor-vehicle truck routes, covered a distance of 63,740 miles, and carried a total of 707,756 pounds, equivalent to more than 1½ tons per day per route, and submits cost figures on certain routes aggregating $19,012.77, with credited postal receipts of $60,000. But a considerable percentage of first, second, and third class mail matter was carried along with the parcel post fourth-class mail matter, and included in the $60,000 receipts. Statement accompanying the report illustrates a few recent shipments of food products transported as parcel post over motor-vehicle truck routes, and shows a total postage paid of $1,687.76, as against a cost of transportation of $1,725.54 for these particular shipments.

RATE INCONSISTENCIES.

The reduction in parcel-post rates has developed inconsistencies in the schedule of charges made for postal service, particularly when compared with second-class zone postage rates, incorporated in the war revenue act of October 17, 1917. This has brought about a condition whereby, for certain distances and weights, the parcel-post charge is lower than the charge for second-class mail matter.

The zone rate on second-class mail matter increases from 2 cents a pound for the first and second zones up to 10 cents a pound for the eighth zone, and as a consequence the local rate of 7 cents for parcels weighing 4 pounds is less than the rate of 8 cents for 4 pounds of second-class matter, and the discrepancy for 70 pounds becomes the difference between 40 cents for fourth class and $1.40 for second class. Similar cases of second-class postage charge higher than the parcel-post rate for the same weight and distance is manifested by comparing shipments of 4 pounds or over for all zones up to and including the fourth zone.

Again, books weighing 8 ounces or less are mailable as third-class matter at 1 cent for 2 ounces for any distance, or at the rate of 8 cents a pound. As a consequence, catalogues which are accorded classification as books go by mail to the seventh and eighth zones at a rate of 8 cents a pound, as compared with a rate of 9 cents and 10 cents a pound for the identical matter incorporated as advertising into a periodical or magazine.

Digitized by Google

The increased postage rate on second-class mail matter, notwithstanding reductions of fourth-class matter, has been particularly burdensome upon publications known as farm papers, performing the very useful and necessary function of keeping their readers upon the farms in touch with the most advanced methods, newest machinery, market conditions, etc. The increased postage burden put upon these papers is 50 per cent upon the reading matter portion, and from 100 to 900 per cent on the advertising portion. The service rendered by the post office in the case of this second-class mail matter entails less expense than for parcel post, since the publisher relieves the post office of the work of collecting, sacking, sorting, and separate weighing.

The average postage on fourth-class mail matter is given in the 1921 report of the Postmaster General at approximately 8⅓ cents per pound, while the average zone rate on second-class mail is 4 cents per pound.

FINANCIAL RESULTS.

The actual financial results of the parcel-post operations of the Post Office Department seem to be still open to question. The Postmaster General's report for the year 1919, referring to the increased volume of business, declares:

> The extent of usefulness of the service to and popularity with the public is reflected in the last estimate of the profits in handling parcel post, which was made in 1916, when the figures compiled indicated a profit in round numbers of $10,000,000 (p. 8).

In the report of the Postmaster General for the year 1920 it is stated:

> It is estimated that the revenue derived from parcel-post mail is now approximately $150,000,000 annually, indicating a profit of about $19,000,000 per annum.

The report of the Postmaster General for the year 1921, after reciting the results of the last preceding test weighing, says:

> The impression prevails that the parcel post is producing a large profit. It was stated that it made a profit of $10,000,000 for the fiscal year ending June 30, 1920. This was based on prewar figures largely. It is my opinion that the parcel post by no means pays for itself.

INSURANCE.

During the fiscal year 1914, the first year of its operation, 13,363,459 parcels were insured; during the fiscal year 1921, 116,326,644 parcels were insured, an increase of 870½ per cent, while the increase over the fiscal year 1920 was 21.96 per cent. During the fiscal year 1920 there were 277,267 insurance claims approved and paid by the department, amounting to $3,760,388.88, and 90,818 insurance claims paid by postmasters, amounting to $808,798.86, a total of 368,085 claims, amounting to $4,569,087.74. If the insurance fee remains at a trifle over 6 cents as shown by the test figures of 1920, the revenue from insurance would be in round numbers $7,000,000, leaving $2,500,000 after payments of these claims.

COLLECT ON DELIVERY.

During the fiscal year 1921, 26,325,267 parcels were sent "collect on delivery," being an increase of 30.98 per cent over the preceding year.

Digitized by Google

Upon this business 60,253 claims for indemnity were allowed, amounting to $723,621.40, an average of $12.01 per claim.

MINIMUM CHARGE.

Theoretically, the minimum charge for parcel post is 5 cents, the zone tariff being based upon a 5-cent local charge with additions for additional weights and distances. As a matter of fact, the actual minimum charge is 1 cent, inasmuch as parcels going as fourth-class mail matter, weighing less than 4 ounces, may be sent at the rate of 1 cent per ounce regardless of distance, while books or catalogues may go in mails at the rate of 1 cent for each 2 ounces, the zone rates applying only when the weight is over 8 ounces.

Referring to the last test weighing for 1920, out of a total of 41,524,990 parcels, 24,324,843 weighed each less than 9 ounces; and the total postage revenue from these parcels was $465,025.80, or about 0.016 cent per parcel. At the same time 2,478,964 parcels weighed 11 pounds and over; 811,934 weighed 21 pounds and over; 60,808 weighed 51 pounds and over.

TRANSPORTATION COSTS.

Since all classes of mail matter are transported in the same cars, which cars are paid for on a space basis, only estimated carrying costs are possible. Before congressional committees postal experts have placed this cost beyond initial zone at 1 cent per pound for every radial haul of 200 miles. The transportation cost for the eighth zone, for example, would be on this basis, not less than 10 cents a pound, increasing according as its terminal is farther than 2,000 miles from point of mailing. Total payments for the year 1921 for railroad transportation for all classes of mail matter was $91,853,000, of which it is estimated parcel post represented 75 per cent of the weight and over 80 per cent of the space.

CONCLUSION AND RECOMMENDATIONS.

Parcel post through its unprecedented expansion has become within a few years one of the important factors in our transportation system. From a comparatively negligible part of the postal business, fourth-class mail matter or parcel post has come to constitute three-fourths of the total postal tonnage with corresponding increase of cost to the department. It has gone far beyond the original proposal for local distribution through the mails of small parcels in order to utilize the empty space in rural vehicles for the benefit of rural patrons, and it is now doing largely what was formerly the express business of the country. This development of parcel post is apparently showing an increased spread between revenues and expenditures.

It is the opinion of this commission that a study should be made of postal rates with a view to a readjustment of charges and the removal of present rate inconsistencies.

Digitized by Google

CHAPTER VII.

ELECTRIC RAILWAYS.

Although some experiments were made as early as 1880, electricity was first successfully applied to street-railway operation in 1888, and within a few years practically all of the street railways had wholly or in part adopted electricity as a motive power. Construction of what are now termed interurban systems was begun in 1897. Table G1 gives the available statistical data covering the electric railways of the country and includes both city lines and the interurban systems. Any consideration of this subject, therefore, must necessarily include both phases of the operation. In order to afford a comparable basis various items covering more or less complete information for the years 1890 to 1921 have been reduced to a revenue car-mile basis, and the result of this calculation is given in Table G2 and chart G1.

Digitized by Google

TABLE G1.—*Statistics relating to electric railways of the United States.*

	1890	1902	1907	1912	1917	1917	1918	1919	1920
Number of operating companies	769	817	945	975	943	320	320	127	127
Miles of line:									
Electricity	1,261.97	21,901.53	34,037.64	40,808.39	44,676.51				
Other	6,861.05	675.46	343.87	256.43	158.86				
Total miles of line	8,123.02	22,576.99	34,381.51	41,064.82	44,835.37				
Investment road and equipment	$389,357,289	$2,167,634,077	$3,637,668,708	$4,596,563,292	$5,136,441,599				
Operating revenues	$90,617,211	$247,553,999	$418,187,858	$567,511,704	$709,825,092	$558,552,226	$594,875,464	$241,532,629	$278,680,278
Operating expenses	$62,011,185	$142,312,597	$251,309,252	$332,896,356	$452,594,654	$354,024,929	$417,508,749	$176,385,221	$209,698,214
Operating ratio	68.4	57.5	60.1	58.7	63.8	65.1	72.1	76.8	78.4
Power-plant equipment (total horsepower)			2,519,823	3,661,385	4,200,192				
Horsepower:									
Steam			2,411,527	3,165,888	3,543,915				
Hydro			91,961	471,307	627,983				
Other			16,335	24,190	28,294				
Cars, total			83,641	94,016	102,603				
Passenger cars			70,016	76,162	79,914				
Express, freight, baggage, and mail cars			5,669	7,794	11,534				
Other cars			7,956	10,060	11,155				
Electric locomotives, total			117	277	857				
Employees, total number			221,429	282,461	394,826				
Compensation			$150,991,099	$200,890,939	$267,240,362				
Traffic passengers carried, total	2,023,010,202	4,774,211,904	9,533,080,766	12,135,341,716	14,506,914,573				
Revenue passengers			7,441,114,508	9,445,554,667	11,304,060,402				
Per mile, all track			216,522	232,556	252,323				
Revenue car mileage, total	338,178,085	1,144,430,466	1,617,731,200	1,921,620,074	2,129,801,530	1,696,402,450	1,692,203,358	591,814,176	604,848,324
Passenger car mileage			1,583,831,199	1,885,870,157	2,087,818,534				
Express, freight, and mail car mileage			33,900,101	35,749,917	51,982,996				
Income, all sources			$429,744,254	$585,930,517	$790,108,040	$569,458,532	$609,208,788	$245,738,089	$283,900,022
Net operating revenue	$28,606,026	$105,241,402	166,878,606	234,615,348	257,230,438	204,527,297	177,366,715	65,147,408	68,991,063
Taxes	3,308,190	13,078,899	19,755,602	35,027,965	45,756,695	34,993,162	37,765,626	15,180,103	17,638,548
Operating income			147,123,004	199,587,383	211,473,743	169,534,135	139,601,089	49,967,305	51,352,515
Nonoperating income			11,556,396	18,418,813	20,282,949	10,896,306	14,333,324	4,205,460	5,210,744
Gross income		95,113,131	158,679,400	218,006,196	231,756,691	180,430,441	155,934,413	54,172,765	56,563,259

Digitized by Google

Total deduction from gross income	64,516,154	118,339,114	149,866,307	175,305,761	138,617,370	142,632,248	46,799,953	47,385,776
Net income	30,596,977	40,340,286	68,139,889	56,450,930	41,813,071	11,202,165	7,372,812	9,177,483
Dividends		26,454,732	51,650,117	48,337,435				
Surplus		13,885,554	16,489,772	8,113,495				
Capitalization, total		3,774,772,096	4,708,568,141	5,532,223,818				
Operating companies		2,811,876,374	3,956,718,023	4,626,788,077				
Lessor companies		962,895,722	751,850,118	905,435,741				
Capitol stock, total		2,097,708,856	2,379,346,313	2,473,846,651				
Operating companies		1,543,269,002	1,957,300,149	2,006,151,013				
Lessor companies		554,439,854	422,046,164	467,695,638				
Funded debt		1,677,063,240	2,329,221,828	3,058,377,167				
Operating companies		1,268,607,372	1,999,417,874	2,620,637,064				
Lessor companies		408,455,868	329,803,954	437,740,103				
Gross capitalization per mile of track		111,569	116,435	126,021				
Net capitalization of electric railways (excluding investments in securities and nonoperating property)		3,400,107,899	4,243,317,727	4,889,962,096				
Net capitalization per mile of track		100,495	104,930	111,391				
All companies:								
Capital stock, total		2,097,708,856	2,379,346,313	2,473,846,651				
Common		1,776,920,076	1,970,385,003	2,012,189,294				
Preferred		320,788,780	408,961,310	461,657,357				
Funded debt		1,677,063,240	2,329,221,828	3,051,179,272				
Real estate mortgages		4,059,805	6,097,245	7,197,895				
Floating debt		278,927,097	296,161,797	166,592,228				
Dividends		54,485,274	70,992,218	73,263,141				
Amount of interest:								
On funded debt				126,654,357				
On unfunded debt (operating companies)		81,771,266	113,259,470	8,603,041				
Operating companies, capitalization		2,814,218,715	3,962,311,191	4,626,788,077				
Capital stock		1,543,269,002	1,957,300,149	2,006,151,013				
Common		1,270,590,322	1,606,071,539	1,592,660,012				
Preferred		272,678,680	351,228,610	413,491,001				
Funded debt		1,268,607,372	1,999,417,874	2,614,351,715				
Real estate mortgages		2,342,341	5,593,168	6,285,349				
Floating debt		222,867,837	279,910,481	160,844,759				

Digitized by Google

TABLE G2.—*Car-mile averages—Electric railways.*

	1890	1902	1907	1912	1917	1917	1918	1919	6 months—		6 months, 1921.
									1920	1921	
Number of companies represented	769	817	945	975	943	320	320	127	127	75	[1] 23
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Operating revenue	26.7	21.6	25.8	29.5	33.1	33.1	36.6	40.8	46.1	46.3	45.7
Passenger revenue										44.6	40.3
Operating expenses	18.3	12.4	15.5	17.3	21.1	21.0	25.7	29.8	34.7	35.2	36.2
Net operating revenue	8.4	9.2	10.3	12.2	12.0	12.1	10.9	11.0	11.4	11.1	9.5
Operating ratio (per cent)	68.4	57.5	60.1	58.7	63.8	65.1	72.1	76.8	78.4	75.9	79.1
Taxes	.9	1.1	1.2	1.8	2.1	2.0	2.3	2.6	2.9	3.2	3.0
Operating income			9.1	10.3	9.8	10.1	8.6	8.4	8.5	9.5	11.2
Nonoperating income			.7	1.0		.6	.9	.7	.9	.6	.8
Gross income		8.2	9.8	11.3	10.8	10.7	9.5	9.1	9.4	10.1	12.0
Deductions from gross income		5.6	7.3	7.8	8.1	8.2	8.7	7.9	7.8	7.7	9.5
Net income		2.6	2.4	3.5	2.6	2.4	.7	1.2	1.6	2.4	2.5
Revenue per passenger carried	5.982	4.171	4.599	6.315	6.779					6.1	4.3
Revenue car-miles	338,178,085	1,144,430,466	1,617,731,300	1,921,620,074	2,139,801,530	1,686,402,450	1,622,293,358	591,814,176	604,848,324		

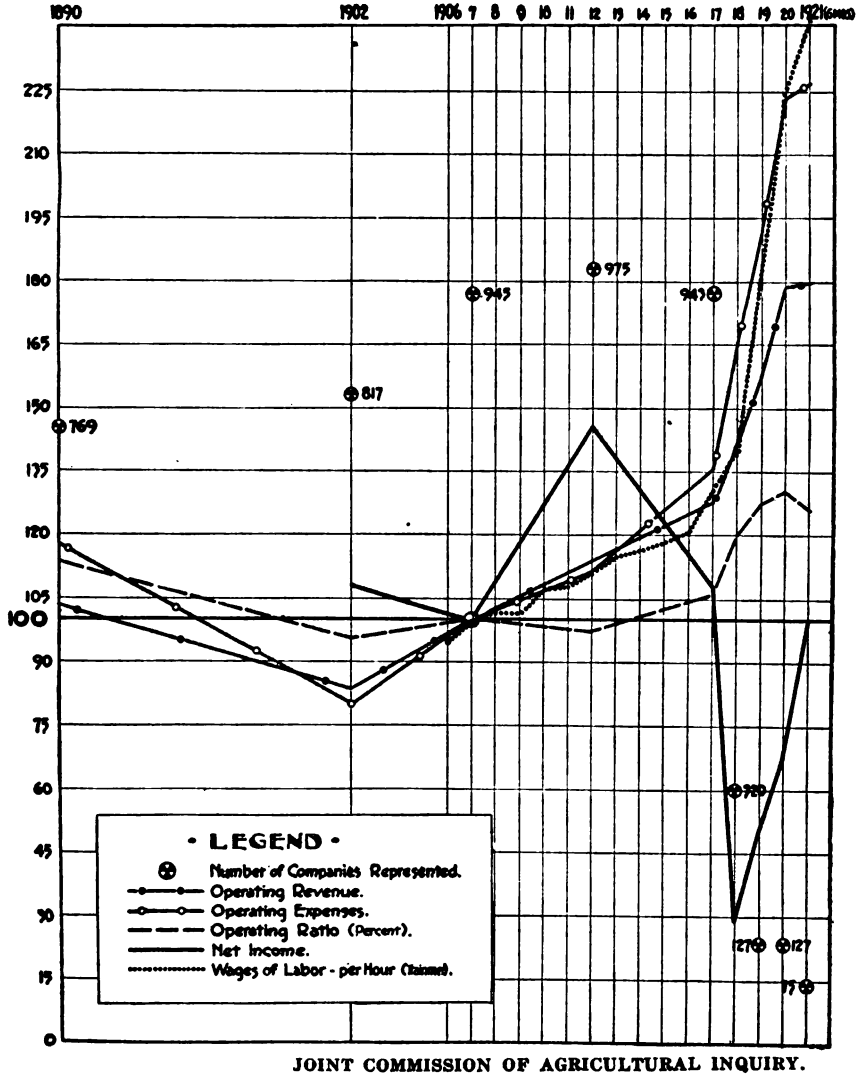
[1] Interurban companies.

Digitized by Google

The number of operating companies in 1890 was 769; this increased to 817 in 1902, 945 in 1907, 975 in 1912, receding to 943 in 1917, the last year for which complete data is available. As a result of the

Chart G 1.

STATISTICS, ELECTRIC RAILWAYS—UNITED STATES, 1890–1921 (1907=100 PER CENT).



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

acute financial condition in which electric railways found themselves during and following the war, there resulted a financial reorganization in many cases and in others the abandonment of operations in unprofitable districts. The records show that up to January 1, 1922,

Digitized by Google

there has been a total of 5,448 miles of track of electric railways involved in receiverships and forclosures. Operation has been abandoned and the property junked in the case of 1,294 miles of track, while service has been abandoned on 784 miles.

As an indication of the growth of the electric lines, the following table indicates the decrease in modes of motive power other than electricity and the increase in electrically operated mileage. The reference to other modes of motive power includes horse-drawn vehicles, cable lines, and the earlier type of combustion engines.

Year.	Electric miles.	Other miles.	Total.	Year.	Electric miles.	Other miles.	Total.
1890	1,261	6,861		1918			45,10
1902	21,901	675		1919			44,69
1907	34,037	343		1920			44,49
1912	40,808	256		1921			44,27
1917	44,676	158					

The investment in road and equipment for 1890 was $47,932 per mile of line; 1902, $96,015; 1907, $105,513; 1912, $111,936; 1917, $114,563.

It is significant that the investment in road and equipment of steam railroads was $67,080 per mile of line in 1912 and $76,495 in 1917. The total investment in road and equipment of electrically operated lines of transportation in 1917 was $5,136,441,599, as compared to $17,762,152,127 for steam lines. It is difficult, however, to make a comparison between steam and electric costs per mile, owing to the variable factors encountered. Electric track construction itself—including, as it does, street paving and a heavier type of construction—is more expensive. The number of cars and other facilities per mile of track may vary considerably as between the electric and steam railroads, and these have a very vital effect upon the relative investments. There has been little change in the investment in electric lines since 1917, largely due to difficulty in financing extensions or new facilities.

Many electric railway companies sell current for light and power, and, where possible, separate reports are made for the railway and for the light and power departments. But in most cases the operations are so interrelated that it has been impossible to segregate some of the account items, and the figures therefore include all data.

The power-plant equipment totaled 4,200,192 horsepower in 1917. Of this, 627,983 horsepower was produced by hydroelectric plants, 28,294 horsepower by internal-combustion engines, and the balance by steam plants. Table G1 gives complete statistics covering the years 1907, 1912, and 1917 and incomplete statistics for the other years under consideration. The traffic handled by the electric lines generally is chiefly passenger traffic, the freight traffic being approximately 3.3 per cent of the total operating revenue.

The following table gives the rate per hour paid trainmen operating electric cars and trains:

Digitized by Google

	Cents.		
1906	23.03	1914	28.14
1907	24.11	1915	28.62
1908	24.75	1916	29.25
1909	24.57	1917	31.57
1910	25.85	1918	33.92
1911	26.10	1919	44.43
1912	26.89	1920	54.02
1913	27.74	1921	58.35

The per cent the aggregate compensation paid labor bears to the total operating expenses is as follows:

	Per cent.		Per cent.
1902	63.0	1917	63.4
1907	61.6	1918	62.9
1912	63.0		

The per cent of the cost of material to total operating expenses is as follows:

	Per cent.		Per cent.
1902	27.28	1912	22.61
1907	26.67	1917	23.12

The balance of the operating expenses consist of the cost of purchased power, insurance, injury and damage claims, rent of track facilities and equipment, stationery and printing, and depreciation charges.

It is not the purpose to discuss at length the operation of street railways. It is recognized, however, that the city railway companies fill an important place in the life of the communities they serve and can not be supplanted by other modes of transportation. It is true that the introduction and use of the automobile has encroached to some extent upon the revenues of the street railway companies, but this competition, which is the first competitive activity to be felt by the street railways, has not seriously affected the revenues except in individual cases, and will not be fatal to their successful operation where these competing forms of transportation are subject to regulation and control by the proper regulatory bodies. When they are required to assume the same responsibilities as to service rendered and license fees and taxes paid they have not proved to be detrimental to existing transportation agencies.

The electric line is found most useful in affording service in densely populated city districts, traversing the cities in subways or elevated roads and by surface lines, giving fast and dependable service between points within the city and between the city and suburban residential districts.

The operation of interurban electric railways presents an entirely different problem. While such lines are largely the extension of city lines, in many cases they are distinct transportation units, having been constructed with a view of serving certain outlying territory; and in some cases connecting the larger cities. These lines are also chiefly passenger-carrying railways. At first the interurban lines handled no freight, but very soon commenced handling what is ordinarily termed "package freight" on their passenger cars, more

Digitized by Google

in the nature of express business than freight business. Gradually the freight business increased until after several years some of the roads commenced the operation of separate cars therefor. This business, in a large degree, was and still continues to be the handling of shipments from wholesale houses in the larger cities to the smaller cities, towns, and villages, and even to country crossroad stops, and as compared with steam railroad local freight business, is an expedited business popular among shippers and consignees as well, on account of its quick delivery. The outbound freight handled is for the most part originated along the lines and is largely composed of the products of agriculture produced by rural communities and the return movement of traffic incidental thereto.

The interurban electric lines in the central and eastern districts do not generally interchange carload traffic with the steam lines. They are not parties to through rates. They do not generally own freight equipment which can be interchanged with and used by the steam lines on a reciprocal basis. In the West, and particularly on the Pacific coast, and in a few special instances in other sections, the interurban lines handle freight and interchange traffic with steam lines on practically the same basis as steam railroads. But by far the largest number do not interchange equipment and are therefore not in a position to offer inducements to industries to locate upon the line, as they can not afford direct and ready access to the general markets. The interurban lines, however, have a real place in the communities they serve. They afford fast and frequent service to passengers and enable the people dwelling in the rural communities to visit the towns 50 to 100 miles distant, and return home the same day. In the handling of package freight they give a frequent and dependable service to the farm districts.

The total capitalization of all electric lines in 1917 was $5,532,223,818. Of this $2,473,846,651 was capital stock, $3,052,179,272 was funded debt, $7,197,895 in real-estate mortgages, and $166,592,228 floating debt. During that year, out of a total of 943 operating companies, 384 reported a net deficit. In 1902 the investment in road and equipment was $2,167,634,077 and the net capitalization was $2,117,619,302. In 1917 the figures were, respectively, $5,136,441,599 and $4,889,962,096. The increase in capitalization between 1902 and 1917 was brought about by a very heavy increase in the funded debt. The increase in the funded debt in the decade ending 1917 being 81.9 per cent, while the increase in the capital stock was only 17.9 per cent.

The financial condition of the electric lines suffered during the war from the same difficulties which effected other public utilities. During the past year, however, an improvement has resulted from increases in rates and the more recent downward tendency in cost levels. The sentiment of the public generally is undoubtedly more favorable to the public utilities than for some years past. It is now seen that the service demanded by the people can not be given without reasonable payment therefor.

The operating ratio as will be seen in Table G1 has not been unfavorable, ranging from 57.5 per cent in 1902 to 78.4 per cent in 1920. The ratio for 75 companies being 75.9 per cent in the first six months of 1921, and for 23 interurban companies for that period it

Digitized by Google

was 79.1 per cent, it would therefore appear that with a reasonable amount of traffic a return could be made upon a capitalization based upon the present valuation of the properties. Each company, however, presents an individual aspect and must be treated individually. Viewing the situation as a whole, it would appear that the electric lines will continue to fill a most important part in the transportation needs of the communities.

Digitized by Google

Chapter VIII.

HIGHWAY TRANSPORTATION.

Highway transport is the first link in the chain which binds the producer to the consumer. Practically all the products from the farm travel first over the highway, and it follows that the final price of the commodity is affected in some degree by the relative efficiency of the roadbed and the vehicle using it.

Perhaps no single development since the railroads were first constructed has had so marked an economic and sociological effect upon productive life as the motor vehicle. Previous to its appearance, the economic zone of transportation was sharply defined by the haulage range of the horse and the cost of such transportation. Motor freight transportation has only become a factor within the last four years, but already has had an appreciable and growing influence on our whole transportation problem.

Studies of the Bureau of Crop Estimates of the Department of Agriculture in 1918 show that the estimated cost for hauling in wagons from farms to shipping points averaged in 1918 about 30 cents per ton-mile for wheat, 33 cents for corn, and 48 cents for cotton; for hauling in motor trucks or by tractors the averages are 15 cents for wheat and corn and 18 cents per ton-mile for cotton. While most of the hauling from farms is done by the farmers themselves, these estimated costs are based largely upon the usual charge in the various counties for hiring team and wagon or for motor truck by the day.

Motor-truck hauling of these commodities in 1918 from farm to railroad shipping point averaged 11.3 miles, while wagon hauls averaged 9 miles; and a motor truck made 3.4 round trips per day over its longer route, while wagons made 1.2 round trips per day.

Studies just completed by the Bureau of Public Roads in the State of Connecticut show an average loaded haul of 47.7 miles for the motor truck.

Similar studies made in other localities indicate that the first result of motor-truck operation and use has been to extend the range of economic haulage from and to the railroad.

It thus appears that the major result accomplished by this new form of transportation has been to extend and broaden the markets of the farmer.

Signal reactions are to be found in the fact that the use of the motor vehicle has brought the farmer closer to the city and also has increased the desirability and comfort of farm life.

A survey conducted in the corn-belt region by the Department of Agriculture also shows that 215 out of 831 farmers answering questions raised have changed their markets since purchasing trucks. For the 215, the average distance to the old market is 6.9 miles, and the average distance to the new market, 17.6 miles. Practically all

Digitized by Google

of these men stated that they had changed markets because the new market is better than the old.

In examining the extent and influence which the motor vehicle has had upon economic and social life in this country, it is only necessary to go back a period of 10 years, when figures from the Bureau of Public Roads show the total motor vehicle registrations in the United States was 501,000, of which 14,000 were trucks. The vehicle estimates for 1921 show 10,300,000 motor vehicles registered, of which 1,390,000 are trucks. The total investment in motor vehicles based on an estimated average of $750 for passenger cars and $1,500 for motor trucks in 1921 was $8,767,500,000, or 46 per cent of the Interstate Commerce Commission valuation of railroads, namely, $18,900,000,000. The total special taxes paid by motor-vehicle users in 1921 is $262,500,000. (Charts H1, H2, Tables H1, H2.)

TABLE H1.—*Motor-vehicle registrations and gross motor-vehicle revenues, 1915 to 1920.*

[From Bureau of Public Roads, 1921.]

MOTOR-CAR REGISTRATION.[1]

	1915	1916	1917	1918	1919	1920
Alabama	11,634	21,636	32,873	46,171	58,898	74,637
Arizona	7,753	12,300	19,890	23,905	29,575	34,601
Arkansas	8,021	15,000	28,693	41,458	49,450	59,082
California	163,797	232,440	306,916	407,761	477,450	583,623
Colorado	28,894	43,296	87,460	83,244	104,865	129,255
Connecticut	41,121	56,048	74,645	86,067	102,410	119,134
Delaware	5,052	7,102	10,700	12,955	16,152	18,300
District of Columbia	8,009	13,118	15,493	30,490	35,400	34,161
Florida	[2] 10,850	20,718	[3] 27,000	54,186	55,400	73,914
Georgia	25,000	46,025	70,324	104,676	137,000	146,000
Idaho	7,071	12,999	24,731	32,289	42,220	50,861
Illinois	180,832	248,429	340,292	389,620	478,438	568,924
Indiana	96,915	139,065	192,194	227,160	227,255	333,067
Iowa	145,109	198,587	254,462	278,313	364,043	437,378
Kansas	72,520	112,122	159,343	189,163	228,600	294,159
Kentucky	19,500	31,500	47,420	65,884	90,008	112,683
Louisiana	11,380	17,000	38,394	40,000	51,000	73,000
Maine	21,545	30,972	41,499	44,572	53,425	62,907
Maryland	31,047	44,245	60,943	74,666	95,634	102,841
Massachusetts	102,633	136,809	174,274	193,497	247,182	274,498
Michigan	114,845	160,052	247,006	262,125	325,813	412,717
Minnesota	93,269	[4] 46,000	[5] 54,009	204,458	259,741	324,166
Mississippi [2]	9,669	25,000	36,600	48,400	59,000	68,486
Missouri	76,462	103,587	147,528	188,040	244,363	297,008
Montana	14,540	25,105	42,749	51,053	59,324	60,650
Nebraska	59,000	101,200	148,101	173,374	200,000	219,000
Nevada	2,009	4,919	7,160	8,159	9,305	10,464
New Hampshire	13,449	17,508	22,237	24,817	31,625	34,680
New Jersey	81,848	109,414	141,918	155,519	190,873	227,737
New Mexico	5,100	8,228	14,086	17,647	18,082	22,100
New York	255,242	314,222	408,016	459,292	566,511	676,205
North Carolina	21,000	33,904	55,950	72,313	109,017	140,860
North Dakota	24,908	40,446	62,993	71,678	82,885	90,840
Ohio	181,332	252,431	346,772	412,775	511,031	621,390
Oklahoma	25,032	52,718	100,199	121,500	144,500	212,880
Oregon	23,585	33,917	48,632	63,324	83,332	103,790
Pennsylvania	160,137	230,578	325,153	394,186	482,117	570,164
Rhode Island	16,362	21,406	37,046	35,218	44,833	50,477
South Carolina [2]	15,000	[6] 25,000	38,332	55,492	70,143	93,843
South Dakota	28,724	44,271	67,158	90,521	104,628	120,395
Tennessee	[7] 7,618	[3] 30,000	48,000	63,000	80,422	101,852
Texas [2]	40,000	[6] 125,000	192,961	251,118	331,310	427,693

[1] Does not include motor cycles nor dealers' and manufacturers' licenses.
[2] State registrations only.
[3] Estimated.
[4] Cars registered during 1916; total number of cars, approximately 138,000.
[5] Cars registered, 1917.
[6] Estimated number of cars in State.
[7] Registrations 1915 only.

Digitized by Google

TABLE H1.—*Motor-vehicle registrations, etc.*—Continued.

MOTOR REGISTRATION—Continued.

	1915	1916	1917	1918	1919	1920
Utah	9,177	13,507	24,076	32,273	35,236	42,636
Vermont	11,499	15,671	21,633	22,553	26,807	31,635
Virginia	21,357	35,426	55,661	72,228	94,100	115,470
Washington	38,823	60,734	91,337	117,278	148,775	173,220
West Virginia	13,279	20,571	31,300	38,750	50,203	80,664
Wisconsin	79,741	115,645	158,637	196,253	236,290	293,288
Wyoming	3,976	7,125	12,523	16,200	21,371	23,936
Total	2,445,664	3,512,996	4,983,340	6,146,617	7,565,446	9,231,941

[From Bureau of Public Roads, 1921.]

TOTAL GROSS REVENUES.

	1915	1916	1917	1918	1919	1920
Alabama	$180,744	$203,655	$217,700	$470,274	$541,348.70	$835,178.00
Arizona	45,579	73,000	117,643	142,288	164,755.68	192,386.92
Arkansas	80,551	150,000	205,176	410,649	500,970.00	591,464.50
California	2,027,432	2,192,699	2,846,030	3,524,038	4,468,721.67	5,714,717.40
Colorado	120,801	197,795	296,808	379,559	490,432.31	819,872.74
Connecticut	536,970	768,728	1,080,757	1,285,164	1,516,136.01	1,852,591.00
Delaware	55,596	85,249	133,883	232,449	286,333.00	329,980.00
District of Columbia	29,396	47,624	55,928	220,753	274,184.00	266,285.00
Florida	[1] 60,000	127,176	[1] 170,000	345,775	401,317.40	554,695.14
Georgia	125,000	154,735	229,653	331,818	429,848.00	1,919,338.92
Idaho	121,259	213,758	412,641	576,555	729,702.94	882,034.51
Illinois	924,906	1,236,566	1,588,835	2,764,330	3,262,714.00	5,915,700.17
Indiana	587,318	817,285	1,096,159	1,293,128	1,558,740.50	2,029,694.00
Iowa	1,533,054	1,776,170	2,249,655	2,547,596	3,077,445.81	7,507,202.08
Kansas	387,588	585,762	830,878	978,837	1,150,000.00	1,419,345.50
Kentucky	117,117	184,741	287,314	402,250	565,520.21	815,549.31
Louisiana	75,600	112,000	166,835	240,000	306,000.00	390,000.00
Maine	268,412	363,562	491,696	570,171	685,570.25	818,755.50
Maryland	386,565	565,302	807,395	1,189,984	1,776,410.22	2,121,924.84
Massachusetts	1,235,724	1,602,958	1,969,994	2,184,821	2,667,853.85	3,890,231.70
Michigan	373,833	1,739,344	2,471,271	2,875,266	3,719,433.39	5,754,900.96
Minnesota	[1] 160,540	82,469	100,000	1,076,811	218,469.50	143,794.50
Mississippi [2]	76,700	175,000	250,000	335,000	400,000.00	800,000.00
Missouri	323,289	439,315	617,942	1,394,762	1,725,076.70	416,245.00
Montana	33,120	52,768	290,936	350,914	407,848.00	2,111,696.85
Nebraska	[1] 183,000	311,334	451,303	536,897	304,450.55	2,800,000.00
Nevada	7,875	20,116	31,166	31,083	37,550.75	103,318.33
New Hampshire	257,776	344,434	425,305	509,335	599,621.25	654,702.04
New Jersey	1,062,923	1,406,806	1,923,164	2,431,757	2,931,904.15	3,503,936.76
New Mexico	29,625	47,865	80,843	105,631	111,150.00	200,000.00
New York	1,991,181	2,658,042	4,284,144	4,945,298	5,984,659.50	8,863,250.59
North Carolina	123,000	206,101	321,923	394,739	1,313,950.73	1,785,000.00
North Dakota	79,245	125,283	211,536	471,429	636,842.40	691,500.00
Ohio	984,622	1,286,405	1,766,427	2,125,426	2,593,000.00	6,400,000.00
Oklahoma	154,892	555,011	853,659	1,102,380	1,178,130.27	2,500,000.00
Oregon	108,881	146,232	196,787	461,422	602,239.00	2,085,168.50
Pennsylvania	1,665,276	2,325,057	3,268,025	4,048,186	5,090,921.00	9,080,873.04
Rhode Island	206,440	264,737	346,117	385,608	477,223.25	531,462.75
South Carolina	15,000	10,000	113,557	300,217	389,034.68	527,868.13
South Dakota [2]	[1] 180,000	140,746	210,592	282,742	322,340.50	784,000.00
Tennessee	[1] 34,000	186,953	322,200	390,000	585,181.95	1,215,776.04
Texas [2]	20,000	20,000	858,978	2,039,589	2,624,334.29	3,510,355.97
Utah	[1] 60,000	93,494	170,707	229,203	291,325.96	350,933.29
Vermont	218,480	297,992	363,541	398,856	460,190.87	555,422.38
Virginia	176,875	271,266	518,566	684,638	900,000.00	1,822,736.16
Washington	238,717	350,052	519,526	875,391	2,325,323.53	2,828,896.10
West Virginia	128,952	198,436	359,339	447,705	1,008,083.31	1,280,193.28
Wisconsin	431,977	615,721	861,278	2,076,701	2,502,852.00	3,127,073.00
Wyoming	19,880	35,625	57,421	80,000	102,114.50	267,179.35
Total	18,245,711	25,865,370	37,501,233	51,477,417	64,697,255.58	102,546,212.25

[1] Estimated.

Going back over the same period, the total highway program for 1910 involved an expenditure of $120,000,000, of which $95,000,000 was for construction. In 1921 the total estimated expenditure was

Digitized by Google

$600,000,000, of which $420,000,000 was for construction. The Federal appropriation for this year was $75,000,000. The total highway expenditures for the period from 1910 to 1921 was $2,526,000,000, and the total replacement cost is estimated at $1,779,000,000. (Chart H3, Tables H3, H4, H5, H6.)

It is thus evident that while the motor-vehicle traffic has increased more than 1,900 per cent in the period 1910 to 1921 the actual expenditures for highway construction and maintenance (taking into consideration the increase in cost of materials and labor during the war and the readjustment period) is only slightly over 200 per cent. (Chart H1.)

Estimates prepared by the Bureau of Public Roads show that the total number of passengers carried 1 mile by automobile in 1921 was 70,820,000,000. This is upon the average of 2½ passengers per automobile and an annual average mileage per automobile of 3,500 miles.

In an actual census taken by the Bureau of Public Roads in California during 1920 the average number of passengers per automobile was found to be 2.2. In the Connecticut census of 1921 the average was 3.25. These counts, taken in conjunction with the records of counts taken by the several State highway departments, indicate the estimate above of 2.5 passengers per automobile to be conservative.

The total ton-mileage of motor-truck operations in 1921 was 6,479,200,000. This estimate is upon the basis of an average load of 2 tons and an average yearly mileage of 2,800. (Bureau of Public Roads.)

The United States Department of Agriculture estimates that 134,400,000 tons of farm products were hauled over the highways of the country in 1921.

The Bureau of Public Roads has correlated information obtained by it from the California, Connecticut, Maryland, and Tennessee surveys, which show in detail the commodities hauled and the quantities and lengths of haul for trucks of different capacities, as well as passenger travel by automobiles and other vehicles.

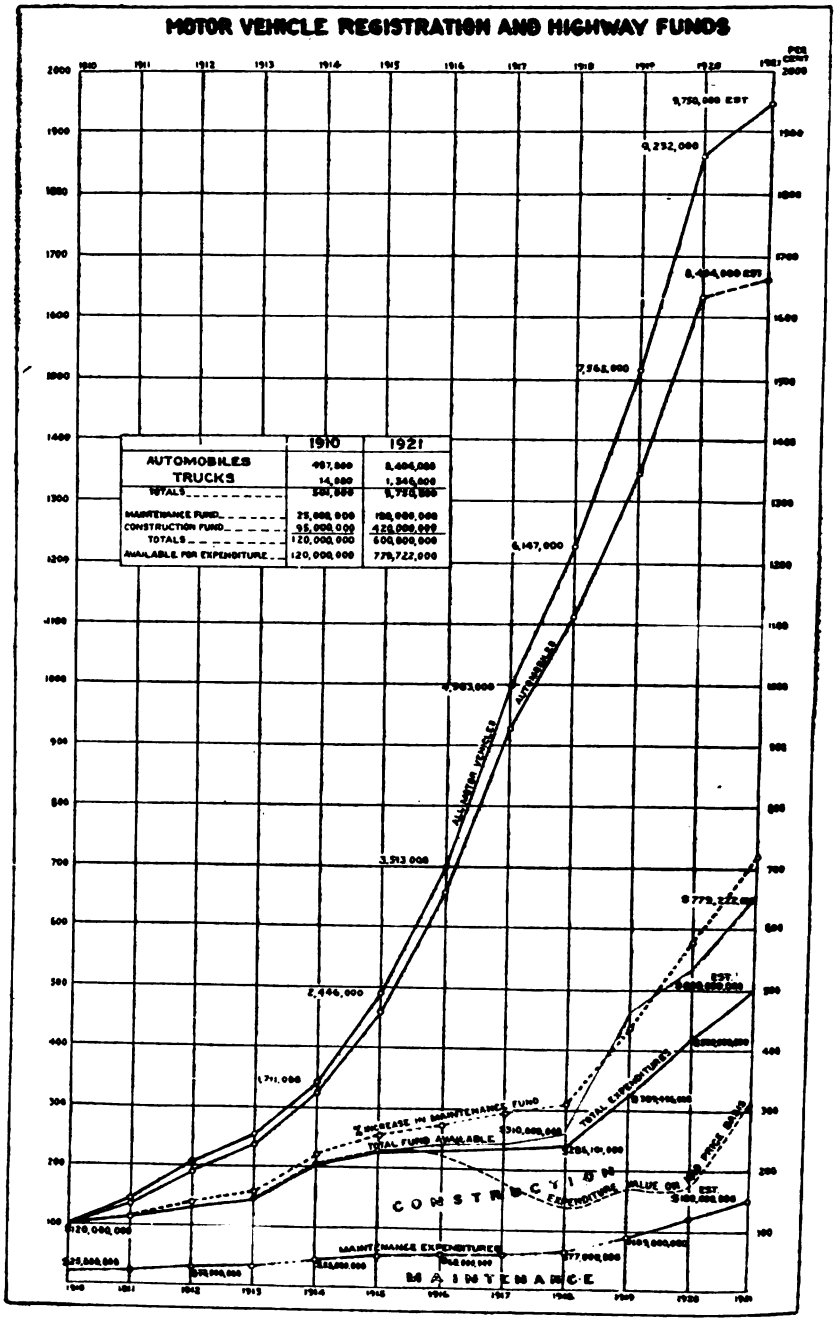
Among the leading commodities distributed under private operation of motor trucks are the following: Farmers' products and supplies, building construction supplies and materials, roofing and paving materials, grocery products, hardware, paper, lumber, oil, machinery, packing-house products, ores, coal, ice, and live stock.

In the delivery of milk to available markets there seems to be a decided advantage in the use of the motor truck, and the collection and delivery of milk and other dairy products generally resolves itself into the development of roadside platforms for milk collection in front of farms producing small quantities of milk, such as one to a dozen cans. At intersections of the main roads and crossroads other platforms are located which are used by the farmers along the side roads. Cans hauled to these platforms are picked up by trucks operated by farmers engaged in the milk-hauling business and by cooperative milk organizations and by creamery-owned trucks.

The transportation problem of the dairy farm producing milk on a large scale is somewhat different from the above, in that such a farm usually sells to one creamery, which takes care of the hauling. Most of the creameries send their own trucks to the various country milk

Digitized by Google

Chart H 1.



Digitized by Google

depots, the milk being hauled to these depots by the farmers and then brought to the creamery in the creamery's trucks.

Centrally located stock markets are now transporting live stock, especially hogs, by motor truck, which was formerly handled short distances by rail or was driven on foot.

This seems to be a natural development of the motor truck, and by relieving the rail carriers of stock traffic that was formerly expensive to handle, and by affording a ready market to the farmer at his option, would seem to benefit all concerned, while on the other hand the long-haul live-stock traffic of the rail carriers is probably increased.

In some sections it is found that the combination of inbound farm products and outbound supplies by motor truck has concentrated upon the motor-truck service the majority of the traffic within 30, 40, and 50 miles.

The effect upon the rail carriers is to reduce the amount of local way freight, and will ultimately reduce the number of local freight trains operated.

TABLE H2.—*Taxes paid by motor-vehicle users, 1921.*

Federal excise:	
Motor car	$64,388,184.22
Motor truck	11,640,055.92
Parts, tires, etc	39,518,009.17
Total	115,546,249.31
State license (revised estimate of Bureau of Public Roads)	125,000,000.00
Gasoline (15 States)	11,000,000.00
Municipal, etc	11,000,000.00
Estimate from municipal laws and regulations	262,500,000.00
Personal property (38 States and District of Columbia)	75,000,000.00
Average value estimated at $500; tax rate at $0.022	337,500,000.00

TABLE H3.—*Federal aid status—Financial statement as of January 31, 1922.*

[From Bureau of Public Roads.]

State.	Federal aid apportioned fiscal years, 1917 to 1922.	Federal aid under construction.[1]	Available for new construction.	Federal aid completed.[2]	Uncompleted Federal aid on projects under construction.	Amounts of Federal aid paid States.	Balance Federal aid earned.
Alabama	$7,329,073	$3,342,023	$3,987,950	$2,125,742	$1,216,281	$1,755,172	$370,570
Arizona	4,824,633	3,279,947	1,544,686	2,680,390	599,557	2,310,418	369,972
Arkansas	5,874,072	[3] 4,194,777	1,679,295	3,509,105	685,672	2,678,342	830,763
California	10,846,453	6,790,429	4,056,024	4,982,335	1,808,094	3,039,952	1,942,383
Colorado	6,121,240	3,462,623	2,658,617	2,898,518	564,105	2,380,926	517,598
Connecticut	2,170,222	1,142,105	1,028,117	825,200	316,905	479,267	345,933
Delaware	813,280	447,655	365,625	447,115	540	437,458	9,657
Florida	4,036,938	2,809,463	1,227,475	1,176,894	1,632,569	731,044	445,850
Georgia	9,405,536	[4] 7,303,106	2,102,430	6,611,003	692,103	6,002,390	608,613
Idaho	4,298,926	[4] 3,198,950	1,099,976	3,190,431	8,519	2,681,384	509,047
Illinois	15,270,548	11,822,873	3,447,675	11,772,818	50,055	9,569,221	2,203,597
Indiana	9,374,148	3,664,242	5,709,906	2,733,604	930,638	2,263,768	469,836
Iowa	10,042,216	7,408,974	2,633,242	6,589,169	819,805	5,295,156	1,294,813
Kansas	9,997,591	6,491,886	3,506,705	5,068,194	1,423,692	4,028,382	1,039,812
Kentucky	6,787,243	4,392,612	2,394,631	3,035,866	1,357,046	2,385,282	650,284
Louisiana	4,739,514	[4] 3,638,681	1,100,833	3,371,745	266,936	2,959,836	411,909
Maine	3,341,124	[4] 2,611,335	729,789	1,944,613	666,722	1,372,360	572,253

[1] Includes projects entirely completed.
[2] Includes completed portions of projects under construction.
[3] Reduction due to withdrawal or cancellation of projects.
[4] Reduction due to payment of final vouchers.

Digitized by Google

TABLE H3.—*Federal aid status—Financial statement, etc.—Continued.*

[From Bureau of Public Roads.]

State.	Federal aid apportioned fiscal years, 1917 to 1922.	Federal aid under construction.[1]	Available for new construction.	Federal aid completed.[2]	Uncompleted Federal aid on projects under construction.	Amounts of Federal aid paid States.	Balance Federal aid earned.
Maryland	3,031,378	2,325,697	705,681	2,233,909	91,788	1,957,955	275,954
Massachusetts	5,148,741	[2] 2,712,005	2,436,736	2,405,163	306,842	1,183,367	1,221,796
Michigan	10,210,828	[3] 5,863,541	4,347,287	5,101,293	762,248	4,394,977	706,316
Minnesota	9,938,980	8,136,031	1,802,949	6,739,944	1,396,087	6,441,277	298,667
Mississippi	6,246,449	4,053,297	2,193,152	3,103,282	950,015	2,299,714	803,568
Missouri	11,770,204	5,904,049	5,866,155	4,030,262	1,873,787	2,689,598	1,340,664
Montana	7,045,713	[2] 3,913,529	3,132,184	3,406 106	507,423	3,004,801	401,305
Nebraska	7,447,951	4,569,367	2,878,584	4,405,807	163,560	3,017,173	1,388,634
Nevada	4,480,713	[2] 1,437,991	3,042,722	1,290,904	157,087	1,146,574	134,330
New Hampshire	1,508,714	[1] 1,100,826	407,888	1,030,662	70,164	986,052	44,610
New Jersey	4,208,170	1,794,499	2,413,671	1,603,745	190,754	1,285 856	317,889
New Mexico	5,579,618	2,648,126	2,931,492	1,943,703	704,423	1,735,779	207,924
New York	17,385,250	[2] 6,945,177	10,440,073	3,544,399	3,400,778	2,955,600	588,799
North Carolina	7,980,025	6,122,468	1,857,557	5,708,279	414,189	4,652,777	1,055,502
North Dakota	5,387,202	3,343,887	2,043,315	2,844,408	499,479	2,218,368	626 040
Ohio	13,025,952	8,064,573	4,961,379	7,742,225	322,348	6,516,256	1,225,969
Oklahoma	8,090,585	[3] 4,229,182	3,861,403	2,911,753	1,317,429	2,625,696	286,057
Oregon	5,514,842	4,318,750	1,196,092	4,297,386	21,364	3,935,226	362,160
Pennsylvania	16,031,598	[2] 12,429,077	3,602,521	12,251,508	177,569	8,538,336	3,713,173
Rhode Island	1,006,791	637,411	369,380	573,659	63,752	557,236	16,423
South Carolina	5,007,855	[2] 3,471,306	1,536,549	2,635,744	835,562	2,192,532	443,212
South Dakota	5,656,943	[1] 3,827,783	1,829,150	2,930,169	897,614	2,031,899	898,270
Tennessee	7,875,830	5,838,226	2,037,604	3,107,304	2,730,922	1,928,681	1,178,623
Texas	20,525,577	12,706,400	7,819,177	9,636,304	3,070,096	7,844,940	1,791,364
Utah	3,966,624	1,728,351	2,238,273	1,427,377	300,974	1,017,092	410,285
Vermont	1,607,729	724,637	883,092	605,875	118,762	589,177	38,698
Virginia	6,908,559	[1] 3,828,845	3,079,714	3,366,720	462,125	2,903,954	462,766
Washington	5,075,385	[3] 3,932,009	1,143,376	3,889,734	42,275	3,816 472	73,262
West Virginia	3,724,864	[2] 2,808,894	915,970	2,390,627	418,267	2,221,320	169,307
Wisconsin	8,899,097	[2] 5 612,568	3,286,529	4,833,512	779,056	4,130,804	702,708
Wyoming	4,313,176	2,917,607	1,395,569	2,452,152	465,455	2,064,580	387,572
Total	339,875,000	213,947,790	125,927,210	177,397,157	36,550,633	143,284,421	34,112,736

[1] Reduction due to withdrawal or cancellation of projects.
[2] Reduction due to payment of final vouchers
[3] Difference due to revision of project statement or agreement estimates.

In all these situations during the transition period when the short-haul traffic to and from the farming centers is being transferred from the local freight trains of the railroads to the motor trucks the cost to the railroads is excessive, because they are not able to reduce materially the expense of operating the freight stations and the local freight trains.

To meet the situation some railroads are operating gasoline motor vehicles on the tracks of branch lines where traffic is insufficient to support the use of steam locomotives.

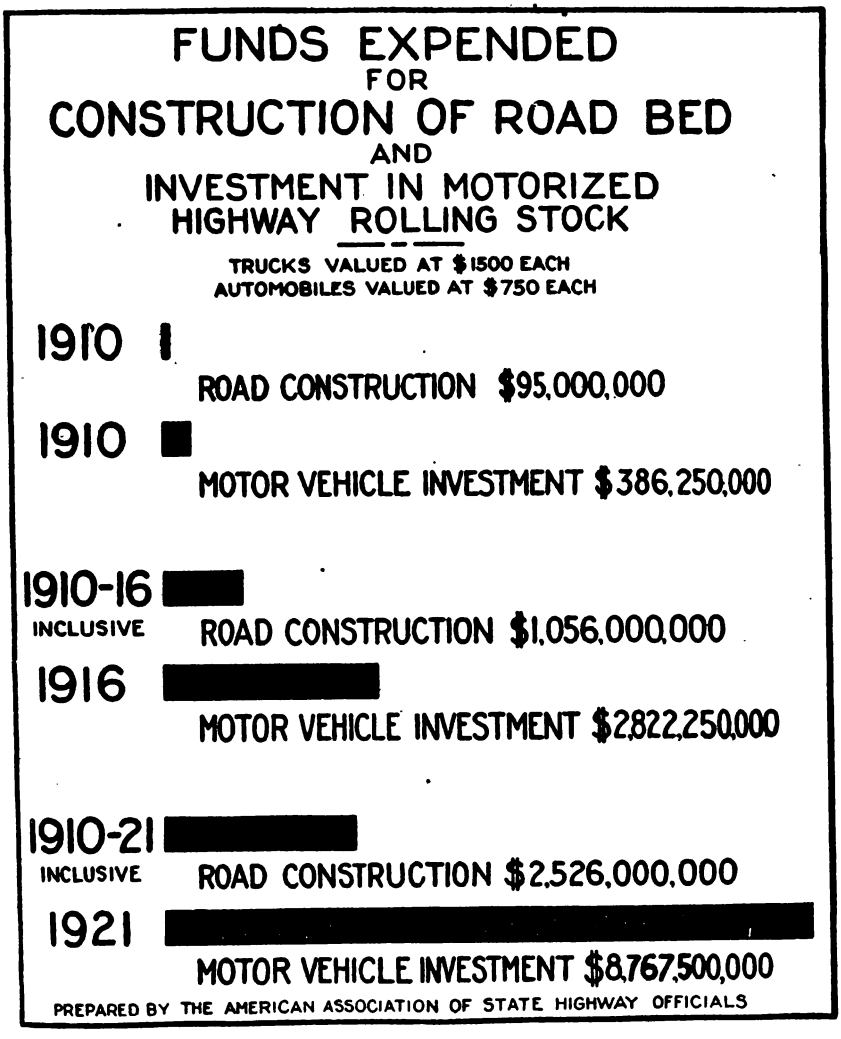
An analysis of the motor trucks now operating to, from, and within Indianapolis in the distribution, cartage, transfer, and transport service follows:

Trucks used in distribution of milk, groceries, laundries, merchandise, etc	500
Trucks used in delivery of coal and ice	250
Trucks used in freight transfer, baggage, and express	550
Trucks used in delivery of sand, gravel, and building material	250
Trucks used in manufacturing and building industry	175
Trucks used in cartage delivery and distribution of vegetables and fruit products	85
Trucks used in transfer of household goods	112
Trucks used in intercity and rural motor express	100
Trucks operating in and out of city in transporting live stock	250
Total	2,282

Digitized by Google

There is a type of service that the motor truck is rendering the farmer which, in many cases, may be found feasible. This is known as the cooperative farm truck. These trucks, like the rural motor express, are designed to serve small farmers. Perhaps it would be better to relate the experiences of a cooperative farm-truck association in order to explain the workings of such an organization. The company in question is known as the Farmers' Cooperative Co. of Harford County (Md.), Incorporated.

Chart H 2.



In this county the association was incorporated with a capitalization of $5,000. Two hundred shares of stock were sold at a par value of $25 per share. Each member was required to buy at least one share of stock, but was limited in his stock purchase to 20 shares. A 4-ton truck, which was operated between Bel Air and Churchville, Md., carried milk, cream, and other farm produce to the city, and foodstuffs, feeds, salts, machinery, and supplies in general on the return trip. The association pays its members for all goods lost or destroyed.

Digitized by Google

Where the shipper desires insurance against loss, the charge for hauling cream is 4 cents a gallon, while, if the farmer is willing to assume the risk, the same charge is made for hauling cream as for milk. The members who live along the route have constructed loading platforms at the same height as the floor of the trucks at their front gates. This facilitates the transfer of freight from the farm platform to the motor vehicle.

This cooperative club is of further assistance to its members in both the purchase and sale of produce and supplies. Members notify the secretary of their needs, and as soon as sufficient number of orders are on hand he buys at wholesale in large amounts in Baltimore. He thereby reduces the cost of the article to the farmer. (Farmers' Bulletin 1032, Department of Agriculture.)

Chart H 3.

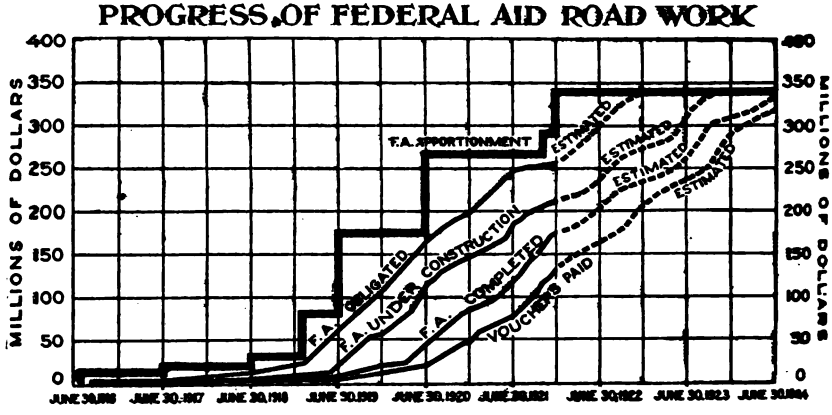


TABLE H4.—*Status of construction on Federal aid post road projects as of January 31, 1922.*

[From Bureau of Public Roads.]

State.	Projects under construction.					Projects on which construction is completed.		
	Total estimated cost.	Federal aid.	Miles.	Per cent complete.	Completion Federal aid.	Total estimated cost.	Federal aid.	Miles.
Alabama	$3,721,147	$1,842,850	267.9	34	$626,569	$3,173,293	$1,499,173	320.6
Arizona	3,766,419	1,713,021	171.8	65	[1] 1,113,464	3,226,003	1,566,926	175.9
Arkansas	5,883,229	[2] 2,285,574	522.8	70	1,599,902	5,665,919	1,909,203	457.8
California	8,450,358	4,204,870	382.9	57	2,396,776	5,416,730	2,585,559	266.4
Colorado	3,259,823	1,611,728	209.1	65	1,047,623	3,905,606	1,850,895	229.3
Connecticut	2,461,879	932,075	48.2	66	615,170	439,722	210,030	16.5
Delaware	210,143	54,000	6.0	99	[1] 53,460	1,615,761	393,655	28.1
Florida	5,634,433	2,720,949	163.8	40	[1] 1,088,380	198,555	88,514	27.6
Georgia	4,960,684	[1] 2,232,589	484.4	69	1,540,486	11,192,175	5,070,517	641.9
Idaho	189,300	[1] 94,650	13.5	91	[1] 86,131	6,577,035	3,104,300	410.1
Illinois	1,149,381	455,044	30.2	89	404,989	24,988,261	11,367,829	723.9
Indiana	3,975,005	1,938,828	106.6	52	1,008,190	3,522,511	1,725,414	89.4
Iowa	10,124,909	4,095,026	949.5	80	3,276,021	8,628,827	3,313,948	472.2
Kansas	15,453,211	4,449,037	453.9	68	3,025,345	6,388,334	2,042,849	157.3
Kentucky	5,704,488	2,769,481	230.3	51	[1] 1,412,435	3,345,945	1,623,131	161.3
Louisiana	4,662,545	2,053,351	354.5	87	1,786,415	3,457,698	[1] 1,585,330	314.9
Maine	3,899,743	[1] 1,904,921	104.0	65	1,238,199	1,489,661	706,414	58.2
Maryland	338,207	152,980	12.8	40	61,192	4,393,380	2,172,717	158.2
Massachusetts	1,597,567	[1] 639,255	28.1	52	[1] 332,413	5,014,891	2,072,750	132.8
Michigan	7,600,260	[4] 3,629,752	269.7	79	2,867,504	4,688,235	2,233,789	211.1

[1] Reduction due to payment of final vouchers.
[2] Reduction due to withdrawal or cancellation of projects.
[3] Correction.
[4] Difference due to revision of project statement or agreement estimates.

Digitized by Google

TABLE H4.—*Status of construction on Federal aid post road projects, etc.*—Continued.

State.	Projects under construction.					Projects on which construction is completed.		
	Total estimated cost.	Federal aid.	Miles.	Per cent complete.	Completion Federal aid.	Total estimated cost.	Federal aid.	Miles.
Minnesota	$10,713,661	$4,230,567	886.8	67	$2,834,480	$10,138,026	$3,905,464	1,073.7
Mississippi	6,294,136	3,064,564	457.3	69	2,114,549	2,057,899	988,733	203.3
Missouri	10,285,400	4,684,468	622.3	60	2,810,681	2,725,400	1,219,581	172.6
Montana	3,954,112	[1] 1,951,628	391.0	74	[3] 1,444,205	4,013,305	1,961,901	333.6
Nebraska	5,484,306	2,725,992	882.2	94	2,562,432	3,842,992	1,843,375	714.6
Nevada	620,695	[1] 308,014	52.3	49	[1] 150,927	2,453,543	1,129,977	143.6
New Hampshire	357,573	[2] 175,410	19.1	60	105,246	1,925,014	[2] 925,416	119.9
New Jersey	1,569,243	414,682	20.6	54	223,928	3,727,439	1,379,817	81.7
New Mexico	3,316,435	1,718,105	579.0	59	1,013,682	1,863,691	930,021	203.1
New York	13,442,865	[2] 5,764,030	324.8	41	2,363,252	2,778,098	1,181,147	66.3
North Carolina	6,595,661	3,186,069	438.3	87	2,771,880	6,491,056	2,936,399	487.9
North Dakota	5,297,417	2,628,835	789.9	81	2,129,356	1,523,805	715,052	367.0
Ohio	7,697,153	2,479,601	188.9	87	2,157,253	16,875,380	5,584,972	482.7
Oklahoma	8,335,399	[4] 3,560,618	298.2	63	[4] 2,243,189	1,404,461	668,564	50.3
Oregon	1,107,416	534,099	52.8	96	512,735	8,157,542	3,784,651	418.5
Pennsylvania	9,467,751	2,959,486	149.7	94	2,781,917	24,722,674	[1] 9,469,591	489.0
Rhode Island	280,815	87,331	6.6	27	23,579	1,330,181	550,080	32.0
South Carolina	3,946,473	[1] 1,856,805	387.0	55	[1] 1,021,243	3,467,828	1,614,501	327.1
South Dakota	6,074,610	[2] 2,992,047	661.4	70	[2] 2,094,433	1,683,441	835,736	175.2
Tennessee	10,123,707	5,057,263	383.7	46	2,326,341	1,570,980	780,963	65.4
Texas	21,055,030	7,675,240	1,352.2	60	4,605,144	12,106,911	5,031,160	1,157.1
Utah	3,014,368	1,504,870	249.5	80	[3] 1,203,896	455,506	223,481	19.5
Vermont	1,132,058	565,534	40.7	79	446,772	325,310	159,103	14.6
Virginia	4,077,025	[2] 2,009,241	177.6	77	1,547,116	3,687,074	1,819,604	231.2
Washington	1,156,391	169,100	22.9	75	[1] 126,825	8,080,674	[3] 3,762,909	354.8
West Virginia	3,410,467	[1] 1,549,136	160.7	73	1,130,869	2,828,819	1,259,758	140.1
Wisconsin	7,909,255	[1] 3,116,223	523.2	75	2,337,167	6,883,317	2,496,345	512.6
Wyoming	3,441,367	1,662,340	255.8	72	1,196,885	2,671,636	1,255,267	366.6
Total	253,153,520	108,411,279	15,184.5	66	71,860,646	247,319,644	105,536,511	13,867.5

[1] Reduction due to payment of final vouchers.
[2] Reduction due to withdrawal or cancellation of projects.
[3] Correction.
[4] Difference due to revision of project statement or agreement estimates.

ABLE H6.—*Total estimated rural road and bridge expenditures for period 1900–1921 and present estimated replacement value of these roads exclusive of value of right of way.*

[From Bureau of Public Roads.]

State.	Total rural mileage.	Earth roads.		Surfaced roads.		Present replacement value.[1]	
		Mileage, 1918.	Expenditure, 1900–1921.	Mileage, 1918.	Expenditure, 1900–1921.	Graded roads.[2]	Surfaced roads.[3]
abama	55,446	40,321	$22,000,000	6,125	$26,000,000	$8,000,000	$15,000,000
zona	12,075	11,600	14,000,000	475	10,000,000	5,000,000	7,000,000
ansas	50,743	48,743	29,000,000	2,000	25,000,000	10,000,000	16,000,000
ifornia	61,039	48,039	120,000,000	13,000	140,000,000	40,000,000	75,000,000
orado	39,780	37,230	15,000,000	2,550	19,000,000	5,000,000	6,000,000
nnecticut	14,061	10,861	20,000,000	3,200	40,000,000	7,000,000	22,000,000
aware	3,674	3,364	3,000,000	310	4,000,000	1,000,000	3,500,000
rida	17,995	14,095	20,000,000	3,900	25,000,000	7,000,000	14,000,000
rgia	80,069	67,469	35,000,000	13,200	50,000,000	12,000,000	26,000,000
ho	24,396	23,546	18,000,000	850	8,000,000	7,000,000	5,000,000
nois	95,647	82,847	80,000,000	12,800	90,000,000	28,000,000	50,000,000

Replacement value as used in this table is equivalent to present replacement cost of a construction
atical with the original minus actual present depreciation.
Includes all earth work, drainage, and structures.
Includes earth work, drainage structures, and surfacing.
Includes value of work performed by convict labor.
he original request was for the investment by the States during the period 1900–1921 in dirt roads and
ed roads, respectively. The data are not available for any reliable estimate as to the investment apart
n maintenance. Data, however, are available on which to base a fair estimate of the total expenditures,
ch is given in this table. The estimated replacement value given in the last two columns, however,
bject to a larger percentage of error than are the total expenditures, since data are lacking as to the exact
at which the roads are deteriorating.

Digitized by Google

TABLE H6.—*Total estimated rural road and bridge expenditures, etc.*—Continued.

State.	Total rural mileage.	Earth roads.		Surfaced roads.		Present replacement value.	
		Mileage, 1918.	Expenditure, 1900–1921.	Mileage, 1918.	Expenditure, 1900–1921.	Graded roads.	Surfaced roads.
Indiana	73,347	42,347	75,000,000	31,000	155,000,000	25,000,000	75,000,000
Iowa	104,074	102,574	180,000,000	1,500	20,000,000	70,000,000	12,000,000
Kansas	111,052	109,502	57,000,000	1,550	20,000,000	20,000,000	11,000,000
Kentucky	57,916	44,016	25,000,000	13,900	50,000,000	9,000,000	25,000,000
Louisiana	24,563	21,863	20,000,000	2,700	20,000,000	7,000,000	11,000,000
Maine	23,537	20,012	20,000,000	3,525	25,000,000	7,000,000	13,000,000
Maryland	16,459	13,359	25,000,000	3,100	45,000,000	9,000,000	25,000,000
Massachusetts	18,681	9,581	18,000,000	9,100	100,000,000	7,000,000	50,000,000
Michigan	74,190	63,590	60,000,000	10,600	75,000,000	20,000,000	40,000,000
Minnesota	93,517	86,517	70,000,000	7,000	50,000,000	24,000,000	28,000,000
Mississippi	45,779	43,079	25,000,000	2,700	15,000,000	9,000,000	8,000,000
Missouri	96,041	88,491	70,000,000	7,550	50,000,000	25,000,000	27,000,000
Montana	39,204	38,304	30,000,000	900	10,000,000	11,000,000	6,000,000
Nebraska	80,272	78,822	40,000,000	1,450	20,000,000	14,000,000	12,000,000
Nevada	12,182	11,842	5,000,000	340	3,000,000	2,000,000	2,000,000
New Hampshire	14,020	12,020	20,000,000	2,000	10,000,000	7,000,000	6,000,000
New Jersey	14,817	8,767	25,000,000	6,050	75,000,000	9,000,000	38,000,000
New Mexico	43,091	42,471	8,000,000	620	7,000,000	3,000,000	4,000,000
New York	79,398	60,998	95,000,000	18,400	215,000,000	30,000,000	100,000,000
North Carolina	50,758	43,908	40,000,000	6,850	40,000,000	13,000,000	21,000,000
North Dakota	68,796	67,636	30,000,000	1,160	10,000,000	10,000,000	6,000,000
Ohio	86,354	54,554	75,000,000	31,800	160,000,000	25,000,000	80,000,000
Oklahoma	107,916	107,216	43,000,000	700	8,000,000	15,000,000	5,000,000
Oregon	36,819	31,819	34,000,000	5,000	37,000,000	12,000,000	20,000,000
Pennsylvania	91,556	80,956	80,000,000	10,600	135,000,000	28,000,000	70,000,000
Rhode Island	2,170	1,420	4,000,000	750	9,000,000	1,500,000	5,000,000
South Carolina	42,226	38,426	15,000,000	3,800	8,000,000	5,000,000	5,000,000
South Dakota	96,306	95,506	28,000,000	800	8,000,000	9,000,000	5,000,000
Tennessee	46,050	37,170	36,000,000	8,800	36,000,000	12,000,000	18,000,000
Texas	128,960	116,660	85,000,000	12,300	75,000,000	30,000,000	38,000,000
Utah	8,810	7,160	15,000,000	1,650	10,000,000	5,000,000	4,000,000
Vermont	14,249	11,949	13,000,000	2,300	12,000,000	4,000,000	6,000,000
Virginia [1]	53,388	47,238	25,000,000	6,150	30,000,000	8,000,000	16,000,000
Washington	42,428	36,128	45,000,000	6,300	45,000,000	15,000,000	23,000,000
West Virginia	32,024	30,424	40,000,000	1,600	20,000,000	14,000,000	11,000,000
Wisconsin	77,280	61,780	60,000,000	15,500	85,000,000	20,000,000	43,000,000
Wyoming	14,797	14,197	7,000,000	600	4,000,000	3,000,000	3,000,000
Total	2,478,552	2,179,417	1,919,000,000	299,135	2,125,000,000	667,500,000	1,111,500,000

[1] Includes value of work performed by convict labor.

Certain sections of the country are particularly favorable to the establishment of long-distance motor routes through the fact that there is only a limited steam-railroad development.

In the matter of claims for damage to or loss of shipments, the information is necessarily incomplete. The organized trucking companies in some cases require the owner of the property to insure his own goods, and in some instances give no bill of lading other than a simple receipt. Some operators give no receipt at all, but in the development of trucking service it is coming to be recognized that the responsibility must be assumed through the issuance of a proper form of bill of lading and by satisfactory insurance policies.

Consolidated rural schools have been made possible in many communities through the use of the motor bus, which is now carrying the farmers' children to 12,000 schools of this type, operated on regular schedules, picking up the children and taking them to the school and subsequently distributing them from the school to the houses.

No data exists upon which conclusions as to the sphere of motor transport in our national system of transportation can be predicated. Moreover, very little data exists as to the relative cost of motor and rail freight transport. A study, however, has been made by Prof. J. Gordon McKay, highway economist of the Bureau of

Digitized by Google

Public Roads, based upon the Connecticut motor-traffic census made by the bureau in cooperation with the Connecticut highway department in the fall of 1921. A summary of the method of making the comparison of the conclusions reached is as follows:

Motor-truck transportation during the last five years was greatly increased by the congestion of freight in railroad terminals and lines during the war, particularly New York City terminals and rail lines entering New York City. Partly in response to appeals to relieve the railroads of the congestion of freight, and partly due to natural causes, commercial motorized freight transport developed rapidly from 1917 to 1921. The rapid growth of this relatively new transport industry presents a complexity of difficult problems requiring analysis. One of the most important of these problems is the competition which developed with the growth of this new industry between the motor freight companies and the rail lines in the movement of less-than-carload freight.

The following analysis deals primarily with the competition on the basis of rates per 100 pounds of freight charged by the railroads and the motor freight companies serving competitive points between New York City and New England points.

The principal purposes of this study are as follows:

1. To determine the kind and extent of motor-truck freight competition with the railroads.

2. To determine the zones of motor-truck operation by comparing the total rail rate and motor-truck rate per 100 pounds less-than-carload freight from New York City to competitive distribution points in New England. The only factors involved in determining the zones of motor-truck operation are rail and motor-truck rates. Additional factors, such as comparison of service time, operating costs, and highway costs due to commercial truck operation, are not included in the determination of the zone of truck operation. The comparison is made to determine the carrier that can transport freight to competitive points cheaper on the basis of the rates charged.

3. To group the principal types of commodities transported by motor-truck companies in each zone of distribution. This grouping and comparison of commodities in each zone is based on the railroad rate classification for rate purposes, indicating which type of transport in each zone handles the commodities in each of the rail commodity classifications—for example, whether the rail lines or the truck companies can transport cheaper to Stamford, Conn., first, second, third, or fourth class commodities.

4. To determine the principal points of distribution of less-than-carload freight by commercial motor-truck companies between New York City and New England territory.

A true comparison of competitive motor-truck and rail rates during the past few years was extremely difficult. There was a dearth of information as to the commodities and their weight transported by truck companies. Before a comparison of any value could be made a survey of the goods transported by motor trucks had to be conducted on an extensive scale. Such a traffic census was completed in the fall of 1921 in Connecticut by the Connecticut highway department in cooperation with the Bureau of Public Roads. This information furnishes a basis for a comparison of the motor-truck rates with the rail rates for each commodity. Conclusions derived by comparing the truck rate with first-class rail rates would be unsound and misleading, since a large volume of goods hauled by truck are charged a lower rate by the railroads than first class, the volume falling between the second and third class rate in the short haul and between the first and second class rate in the long haul. The use of the New York City to Hartford rail rate on vinegar, a third-class rate of 45 cents per 100 pounds, as a first-class rate which carries a charge of 63 cents with the truck rate is unfair. A true comparison must be made as to the charges for vinegar on the basis of the third-class rail rate of 45 cents with the truck rate of $1.13 per 100 pounds.

In the past comparisons of rail and motor-truck rates usually consisted in comparing the first-class rail rate with the motor-truck rate regardless of the fact that a considerable portion of goods transported by truck are not charged a first-class rate by rail, but fall into the lower rate classifications. This error in comparison can be attributed to the lack of information as to the actual commodities transported by commercial motor freight companies.

Digitized by Google

It is a mere statement of fact to say that the following study of rail and truck rates competition is but an introduction to the study of the sphere of motor transport. A further detailed analysis of all the phases of motor freight transport where competition with rail lines exists must be made, weighing all the factors involved before a final determination of the true field of motor-truck freight transport. In addition to the comparison of rates of both types of transport, the final analysis must include the following factors, which are fundamentally a part of the field of motor freight competition with rail lines: Average haulage costs from consignor to rail terminals and from rail distribution warehouses to consignee; average boxing and crating charges for those commodities which require boxing and crating for rail shipment in excess of that required for truck shipment; comparison of actual time required to transport freight by each carrier from shipper to consignee; liability of each carrier in case of loss or damage of freight in transit; analysis of each carrier as to whether a business of increasing or decreasing cost; motor-truck operating costs per ton-mile; comparison of the relative investments of competing rail and truck companies; terminal facilities and terminal charges; insurance of goods handled; the specialized types of service offered by each carrier: freight-trucking routes and zones of operation; failures occurring in the commercial freight-trucking field; comparison of the principal commodities transported by each carrier as to whether predominantly of high value and small bulk, or large bulk and low values; centers of truck and rail competition: guaranty of service by each carrier under both good and poor business conditions if either type of service is to ultimately become permanent in the field of the short or long haul; influence of different pavement type on truck-operating costs; the percentage of highway maintenance chargeable to motor trucking as an operating cost; presence or absence of regulations governing each type of transport as to rates, service, unfair competition, and permanence of service offered by each to shippers of freight.

This picture of the many problems involved clearly indicates that we can not determine the ultimate sphere of motor-truck operation without making a study of the entire field of motor-truck transport.

The principal commodities, tonnage, and distribution points used are taken from the data collected during the two weeks' traffic census on the Boston post road in October, 1921.

A considerable number of motor trucking companies were engaged in the transportation of freight from New York City to New England points during the fall of 1921. The average truck rate used in this study is a pick-up and delivery rate. The rate schedules of the following motor trucking companies were used in determining this average rate per 100 pounds of freight from New York City to New England distribution points. Brockelhurst and Potter, Eastern Motor Lines, New York-Springfield Dispatch, Red Line Transportation Co., Williams Terminal Dispatch, and the Trucking Association rates for 1920. In practically all cases the rate tariffs of these companies were in effect during October of 1921.

When the individual company's rates were quoted as terminal to terminal, 30 cents per 100 pounds was added to the terminal to terminal rate, giving an average door-to-door delivery rate in all cases.

The rates of the New York, New Haven & Hartford Railroad are used in making the rate comparison since this railroad serves the same territory covered by commercial trucking companies whose rates are utilized. Two rail rates are compared with the average truck rate. The old rail rates were in effect prior to November 15, 1921, while the new rates became effective November 15, 1921. The latter rates are approximately two-sevenths higher than the old rail schedules.

The total rail rate compared with the truck rate for each commodity consists in each case of two and in some cases three of the following charges: (1) The basic rail rate determined by the rail commodity classification; (2) haulage charges to rail terminals in New York City and from freight warehouse at point of destination to consignee; (3) packing and crating charges when the commodity is shipped by truck without packing and crating while packing and crating is required for shipment of the same commodity by rail.

In all cases the total rail charge consists of the summation of 1 and 2, and when a difference in boxing and crating exists a summation of 1, 2, and 3.

(1) *The basic rail rate.*—Official classification is used in determination of the base rate, according to the New York, New Haven & Hartford tariff schedules, both old and new.

Digitized by Google

(2) *Haulage charges.*—Since the rate comparison is based on door-to-door delivery, it is necessary to add to the basic rail rate for each commodity the average haulage charges from point of origin to New York City freight terminals and from destination terminal to consignee. Thirty cents per 100 pounds is taken as the average cost covering this charge at both ends. The truck cost per ton-mile in New York City, according to F. V. Greene, is $1.60, or 8 cents per 100 pounds per mile. A 2-mile haul in New York City is approximately the average distance from consignor to terminals, and makes the haulage charge in New York City 16 cents, leaving 14 cents to cover haulage charges at point of destination. This average of 30 cents is quite likely higher than the real average cost of haulage to and from rail points, but is sufficiently high to avoid criticism.

(3) *Packing and crating charges.*—Ninety-nine separate commodities make up the list of freight shipped by truck from New York City to the various New England distribution points. Seven of these commodities require packing and crating for rail shipment in excess of that required for truck shipment. The balance of the group of commodities require practically the same packing and crating for truck and rail shipment. It is necessary to add this excess cost of packing and crating in each of the seven cases to the rail rate in order to compare with the truck rate on the same commodity where packing and crating is not required. The following articles are the commodities which move by truck with little or no packing and crating requirements but which must be packed and crated for rail shipment: Electrical supplies, fixtures, household goods, machinery, nursery supplies, pianos and musical instruments, telephone supplies, and typewriter supplies.

A charge of 24 cents for boxing and crating is the charge added, plus 17 per cent of the rail rate for increased weight due to the boxing and crating. W. J. L. Banham, general traffic manager of the Otis Elevator Co., New York City, is the source of information as to these charges of 24 cents plus 17 per cent. His conclusions are based largely on the shipment of a few specialized articles under the abnormal requirements of packing and crating for shipment out of New York City to prevent damage to goods. They do not necessarily represent boxing and crating charges on the seven articles listed above. B. Campbell, vice president of the New York, New Haven & Hartford Railroad, commenting upon Mr. Banham's figures on boxing and crating charges, said as follows: "There is a fallacy in the claim that a saving of 24 cents per 100 pounds is made in boxing plus a saving of 17 per cent of the freight rate on the increased weight of boxing when shipped by motor truck. Generally speaking, there is no difference in the boxing or package requirements when shipped by either method. A very large part of the merchandise handled in commercial trade is contained in standard packages; for illustration, boots and shoes, canned goods, sugar, soap, starch, coffee, tea, mineral water, and a long list of others that might be named. These and other commodities could not be shipped loose or unpacked, it would be unsuitable to trade requirements, and there would be a lack of protection against damage resulting from the hard jolting that comes from motor trucks operating over the highways."

It is more than likely that the boxing and crating charges used in this analysis or those commodities, where a difference in boxing and crating exists, exceeds the average cost for this service. Nevertheless, the above figures are used due to a lack of other data on the subject of the average costs of boxing and crating.

A study of Tables H8 and H9 show clearly the sphere of motor-truck operation on the basis of comparative rates. With a few exceptions, as the length of the haul increases the advantage of the truck decreases until the point is reached where the rates are about equal, and from this point on a further increase in mileage results in a growing advantage in favor of rail shipment. The only exception to this gradual increase and decrease is the case of Derby, Conn. On the basis of the trucking rates available, this city seems to have an advantage over other cities of about the same distance from New York City.

There are also some irregularities in the figures for the multiple classes in the railroad classification. This group includes commodities classified at double first class, one and one-half times first class, and one and one-fourth times first class, and necessarily the average figure for any point of destination will depend largely on which of these classifications the majority of items in this group are subject.

A summary table of this kind can bring out only general conclusions. This table, therefore, does not bring out the fact that the seven commodities listed

Digitized by Google

above, which require special packing and crating for rail shipment, can be carried greater distances before the truck charges become equal to the rail charge. For example, while the economical limit of the shipment of first-class freight by truck under the new rate scale is reached at about 70 miles, it is still profitable to ship pianos by truck to Hartford, Conn., a distance of 112 miles. The same principles will apply to the rest of these commodities, which are peculiarly adapted to shipment by truck.

With the exception of these few commodities it is evident from the tables that under the new rate scale commodities taking multiple class rates can be carried at lower rates by truck up to about 140 miles, first-class commodities up to 70 miles, second-class commodities up to 45 miles, and third and fourth class commodities up to about 25 miles.

Under the old scale of rates we find that these distances are somewhat less. On commodities taking multiple class rates the truck rate is lower up to about 80 miles; first-class commodities up to about 40 miles; second-class commodities up to about 25 miles; third and fourth class commodities at considerably below 25 miles.

On the basis of these figures and taking into consideration the relative amounts of each class of freight being handled, the average length of haul at which the truck rate and rail rate become equal is under the new rate scale 45 to 50 miles.

Under the old rate scale the average distance at which the two rates would be equal is about 30 to 35 miles.

TABLE H8.—*Summary comparison of rail and truck rates (old rates).*

[Excess of truck rates over rail rates indicated by +.]

	Mileage.	Multiples of first class.	First class.	Second class.	Third class.	Fourth class.
Greenwich, Conn.	30	−35	−2	+4½	+12½	+16
Coscob, Conn.	32	−46	−2	.....	+9½	.....
Stamford, Conn.	35	−27	−2	+3	+9½	+15
Norwalk, Conn.	44	−25	+4½	+10	+17	+23
Westport, Conn.	47	−25	+6	+12	+19	.....
Bridgeport, Conn.	58	−22	+12	+18	+25	+32
Danbury, Conn.	66	−4	+17	+23½	+31	.....
Derby, Conn.	72	−16	+12½	.....	+26½	+33½
New Haven, Conn.	75	−8	+24½	+31	+38	+46
Waterbury, Conn.	90	+6	+28½	+35½	+43	+50½
New Britain, Conn.	106	.....	+30	+37½	+43	+51
Hartford, Conn.	112	+15½	+38	+45½	+51	.....
Springfield, Conn.	139	+22	+56	+63½	+69	.....
Providence, R. I.	203	+59	+97	.....	+110½	.....
Boston, Mass.	243	+89	+126	.....	.....	.....

Heavy line indicates the limit of economical truck shipment on the basis of rate comparison for each class of freight.

TABLE H9.—*Summary comparison of rail and truck rates (new rates).*

[Excess of truck rate over rail rate indicated by +.]

	Mileage.	Multiples of first class.	First class.	Second class.	Third class.	Fourth class.
Greenwich, Conn.	30	−56	−15	−0½	+1½	+9½
Coscob, Conn.	32	−62	−16	.....	0	.....
Stamford, Conn.	35	−47	−16	−8½	0	+8
Norwalk, Conn.	44	−44	−10	−2½	+7	+15½
Westport, Conn.	47	−47	−9½	−1½	+8½	.....
Bridgeport, Conn.	58	−49	−4	+4½	+14½	+24
Danbury, Conn.	66	−29½	0	+9	+19½	.....
Derby, Conn.	72	−41	−11	.....	+15	+25
New Haven, Conn.	75	−33	+7½	+16½	+27	+35
Waterbury, Conn.	90	−21	+10½	+20½	+31	+41½
New Britain, Conn.	106	.....	+12	+22½	+30½	+41½
Hartford, Conn.	112	−11½	+20	+30½	+38	.....
Springfield, Conn.	139	−4	+38	+48½	+56	.....
Providence, R. I.	203	+28	+76	.....	+94½	.....
Boston, Mass.	243	+58	+105	.....	.....	.....

Heavy line indicates the limit of economical truck shipment on the basis of rate comparison for each class of freight.

Digitized by Google

From these studies it will be found that in the main the trend of operation of the motor truck on highways may be divided into six parts:

1. The haulage of commodities from the farm to the railroad or water shipping point.

2. The use of the motor truck in relieving congested terminal conditions.

3. The use of the motor truck in radial operations from large cities in the delivery of less-than-carload lots of merchandise and raw materials.

4. In the haulage of perishable farm and dairy products, such as milk, fruit, and vegetables.

5. In the operation in short hauls between centers of population, where the truck offers a special degree of service in the carriage of commodities from the consignor to the store door or home of the consignee, where time is an important factor.

6. In longer hauls, where there are no rail facilities, such as those found in parts of Maryland and in sections South and West, where rail development has not been sufficiently extensive.

An examination of the costs of operation of these different movements must necessarily be somewhat limited at this time. Thus the condition and seasonal use of highways is different as between communities not more than 10 or 15 miles apart. The varying kinds of commodities to be hauled, the question of rail and water facilities, and the type and tonnage capacity of the motor vehicle used in connection with the type and grade of highway traveled upon, all prevent more than specific local studies at this time. Additional detailed information must be accumulated before we can hope to arrive at conclusions covering anything more than specific operations.

This situation is further complicated by the fact that the road engineer has been unable to design rational systems of highways because of incomplete knowledge of the probable trend of traffic over a proposed highway, with the added factors of diversion of traffic to and detour over newly constructed hard-surface roads. Investigation of motor operation is further complicated by the complex and varying rules, regulations, and methods of taxation imposed by the several States.

Table H7 gives a summary of the laws governing the control of motor vehicle common carriers in the several States. While there appears to be some uniformity in the powers granted the State agencies exercising control, the regulations fixed by such agencies are not uniform and the taxes and license fees levied are in no way comparable.

In view of the rapid growth of this form of transportation and the use of motor vehicles in interstate as well as intrastate commerce this commission recommends that the several States adopt uniform laws and regulations governing their operation as common carriers.

Since the growth in the use of the motor vehicle has not only been very markedly in advance of highway construction and maintenance, but more, since it has brought with it a new and heavier form of highway traffic, it becomes evident that large funds will have to be expended if the 2,500,000 miles of rural highways in the United States are brought up to the standard of efficiency comparable to the extended use of the roadbeds.

Digitized by Google

It will take many years to carry out this whole program, and it will be many years before the improvement of all the roads will be necessary, but the above glimpse of what is before us seems appropriate.

Another influence which follows in the wake of improved highways is the ability of the farmer to hold his products on the farm for a longer time. Where highways are unimproved the farmer must move his produce when the roads are good, which is generally at the season when prices are lowest. Improved highways thus make not only for a broader market but for a more stabilized one.

The uneconomic method of highway improvement, until recently in vogue, is being superseded. On November 9, 1921, the President approved an appropriation made by Congress for Federal aid to roads which limits expenditure on Federal-aided roads to a well-defined system, consisting of not to exceed 7 per cent of the total existing road mileage. This will constitute a framework upon which to build a much greater system, eventuating in the improvement of our whole mileage. (Federal aid act, 1916, as amended 1919 and 1921.)

Surveys made by railroads in eastern territory indicate that the use of the motor truck thrives in proportion to the extent of good roads. Motor trucks can not be successfully operated over rough or muddy highways.

It would not be out of place to say that the farmer is as much interested in the location and direction of the roads for which he is paying as he is in the type of road.

First and foremost the road should bring into connection with the railroad as much territory as possible, and this can only be done economically when the situation is carefully studied in advance.

If the highway is to be built primarily for passenger vehicles a route which traverses the most beautiful sections and connects the communities most directly will find most favor with the tourists and the dwellers in the cities and towns; but the farmers who want to market their products in bad weather as well as good, who produce a surplus beyond the demand of their own families and immediate neighborhood, will ask that the highways be laid out so as to give them access to all markets, and this should not be done by paralleling the main railroads but by building and maintaining the feeder roads from the main roads and from the railroad.

Another factor has been the lack of adequate maintenance for the highways already in use. The enormous spread of our highway traffic in a few years, coupled with abnormal conditions during the war, has prevented our highway authorities from adopting and carrying adequate maintenance.

The rapid evolution of highway transportation has brought with it new problems. From a study of the above conditions, as supported by the detailed facts and figures accompanying this report, the following recommendations are made in order that agriculture may be provided with a complete rational system of highways at the earliest possible moment and may receive the benefit of the reduction in highway transportation costs as soon as possible. It is recommended:

(*a*) That the program of Federal aid and supervision be continued.

(*b*) That the program of highway construction and maintenance by States and counties be continued under the direction of qualified

Digitized by Google

experts with particular reference to the construction and maintenance of farm-to-market roads.

(*c*) That the program of appropriations for research into methods of road construction and maintenance, density, character, and effect of traffic be continued, and regulation of traffic and highway construction based upon the facts ascertained by such research.

(*d*) Since poor highways not only increase the cost of transportation of commodities from farm to market, but also affect the comfort of the farmer and prevent him and his family from a full enjoyment of communication with his neighbors, all highways wherever possible should be improved and adequately maintained.

(*e*) Highway design, construction, and maintenance is a science and should be in the hands of trained engineers and investigators.

(*f*) That the several States cooperate in effecting a uniform basis for taxing motor trucks and other motor vehicles which will fairly represent the reasonable proportion of the cost of highway construction and maintenance chargeable to such vehicles.

(*g*) The question of relationship between railways, waterways, and highways should be subject to a rigid analysis in order to determine the economic value of each, and all three should be tied together in as close coordination as possible.

Digitized by Google

Chapter IX.

TRANSPORTATION BY WATER.

The subject of transportation by water has been divided into Trans-Oceanic, Panama Canal, Coastwise Inland Waterways, and the Great Lakes, and will be treated in the order named. As of October 1, 1921, the American merchant marine comprised 1,943 vessels of 5,387,056 gross tons under private ownership and 1,803 vessels of 8,078,061 gross tons owned by the United States Shipping Board. Very little data is available covering the operation of the American merchant marine other than that of the Shipping Board, and we will attempt only to indicate herein the operations of that organization.

The world's prewar ship tonnage amounted to approximately 48,000,000. The present tonnage amounts to 62,000,000 gross tons, not including 1,640 seagoing vessels of 6,199,468 gross tons now being built. These figures do not include the German tonnage under construction. The greater increase of tonnage is principally American, and as the world's demand for tonnage does not now equal the prewar requirements it would appear that for many years to come there will be a surplus of shipping to meet the necessities of trade. The ability of American-owned vessels, built and operated at high cost, to compete in ocean-going commerce increases with the surplus of ocean-going tonnage. This question, therefore, should be given very careful consideration.

Table I1 gives the important items contained in the consolidated balance sheet as of June 30, 1921, of the Shipping Board. The financial status of the Shipping Board is well known. The Shipping Board was organized and financed under war conditions and for the most part to meet war-time necessities, and this should be remembered in considering the financial operations.

Table I2 gives the disposition of the sums appropriated by Congress from the inception of the Shipping Board to July 1, 1921. The total net cost of the fleet of 11,670,767 dead-weight tons was $2,409,563,669. In addition to this amount the sum of $571,343,557 is chargeable to various items of construction, including $327,965,264 representing the cost of ships sold, the total expenditures on vessels being $2,980,907,226, from which should be deducted the amount received from sales, which was $293,907,429. The net amount invested in vessels, therefore, as of July 1, 1921, is $2,686,999,797. The ownership of the United States Shipping Board on the same date, was 1,792 vessels of 11,323,668 tons dead weight, the average investment per vessel being $1,449,441, and the average investment per ton dead weight, $237.29. On December 31, 1921, there were 425 vessels of 3,431,578 tons in active service and 1,299 vessels of 7,855,547 tons on the inactive list, not including tugs.

Digitized by Google

Table I3 gives a recapitulation of owned and controlled vessels. Table I4 gives the distribution of the active fleet by trade allocation and data as to the disposition made of the inactive fleet.

Table I5 gives the distribution of the active fleet by form of control and a complete list of the steamship companies operating Shipping Board vessels. The ocean-going tonnage, while largely engaged in export and import trade between ports in the United States and foreign countries, is also to some extent engaged in coastwise traffic, particularly traffic between the Atlantic and Pacific coasts moving through the Panama Canal.

TABLE I1.—*United States Shipping Board status of finance and shipping—Consolidated balance sheet as at June 30, 1921.* [1]

ASSETS.			
Current assets:			
General cash and cash fund		$34,047,304.54	
Accounts receivable		234,320,401.41	
Notes receivable		78,252,239.98	
Advances		31,116,276.23	
Investments		84,655,663.72	
Materials, supplies, ship stores, etc		102,860,374.22	
Total current assets			$565,252,260.10
Capital assets:			
Purchases, construction, and reconditioning expenditures, owned vessels available and in process		$2,403,660,511.96	
Plants, property, and equipment, fuel-oil stations, real estate and buildings, furniture and fixtures, mechanical office equipment, automobiles, launches, etc		83,808,037.47	
Construction of and improvements to, etc., housing projects and transportation facilities		17,878,708.87	
Total capital assets			2,505,347,258.30
Total			3,070,599,518.40
LIABILITIES, ETC.			
Current liabilities:			
Vouchers payable:			
Audited	$48,335,583.49		
Unaudited	19,674,631.92		
		68,010,215.41	
Accounts payable		1,228,377.61	
Charter hire payable:			
Foreign Governments	765,488.35		
American vessel owners	42,129,883.02		
		42,895,371.37	
Unclaimed wages		1,088,489.10	
Deposits on sales, charter, hire, etc		10,771,425.62	
Total current liabilities			123,993,879.11

[1] Supplied by United States Shipping Board.

Digitized by Google

Capital liabilities:		
Mortgages payable	4,000.00	
First-mortgage bonds on shipbuilding plants	2,500,000.00	
Total capital liabilities	2,504,000.00	
		126,497,879.11
Appropriations		3,310,170,576.98
Reserves		1,014,254,257.45
		4,450,922,713.54
Net outcome of all transactions by classes of activities from inception to June 30, 1921 (Exhibit B)		1,380,323,195.14
Total		3,070,599,518.40

TABLE 12.—*Disposition of appropriation moneys from inception to July 1, 1921.*[1]

[Figures have been approximated.]

Cost of fleet owned July 1, 1921 (not including $166,756,915 of undistributed construction costs and subject to increase upon settlement of claims):		
Steel vessels, 10,568,509 tons	$2,185,310,734.68	
Wood vessels, 1,054,476 tons	210,675,139.66	
Concrete vessels, 47,782 tons	13,577,795.77	
		$2,409,563,669.53
Other outlays on vessels:		
Construction charges undistributed to vessels	166,756,915.46	
Vessels lost	51,262,572.10	
Expenditures on construction contracts canceled	25,358,805.12	
Cost of ships sold	327,965,264.61	
		571,343,557.29
Total expenditures on vessels		2,980,907,226.82
Deduct sales of vessels		293,907,429.54
Net amount invested in vessels		2,686,999,797.28
Shrinkage in assets at July 1, 1921:		
Depreciation in inventories	143,261,040.59	
Uncollectible and doubtful accounts	76,636,466.37	
Reduction of receivables by offsetting claims and liabilities	85,937,824.26	
		305,835,331.22
Net assets at July 1, 1921, exclusive of fleet and without provision for pending claims		190,117,736.23
Losses on sales of assets other than vessels, costs of reconditioning ex-enemy vessels, expenses of requisitioning vessels of neutrals, including repatriation of crews, recruiting service, administrative expenses, accidents and marine losses, gains or losses from operations, etc		123,357,712.25
Total		3,306,310,576.98
Peak ownership June 30, 1921:		
1,792 vessels (all types), 11,323,668 tons dead weight, average investment per vessel		1,499,441.00
Average investment per ton dead weight		237.29

[1] Supplied by United States Shipping Board.

Digitized by Google

TABLE I3.—*Recapitulation of owned and controlled vessels, December 31, 1921.*

	Number.	Dead weight.
Steel vessels	1,450	10,254,241
Steel tugs	34	
Wood and composite vessels	264	970,101
Wood tugs	18	
Concrete vessels	10	62,783
Total	1,776	11,287,125
Status Dec. 31, 1921 (excluding tugs):		
In service—		
Assigned for operation	403	3,318,442
Assigned to Army	1	8,700
Chartered to private operators	21	104,436
Total active	425	3,431,578
Out of service—		
Steel vessels	1,625	6,822,663
Wood vessels	264	970,101
Concrete vessels	10	62,783
Total inactive	1,299	7,855,547
Grand total (excluding tugs)	1,724	11,287,125
Distribution by type of vessel (excluding unfinished hulls and barges):		
Steel—		
Cargo (steam)	1,301	8,860,313
Cargo (sail)	2	5,847
Cargo and passenger	45	453,443
Refrigerator	13	91,183
Colliers	2	10,972
Tankers	87	802,483
Total steel	1,450	10,254,241
Wood and composite, cargo	264	970,101
Concrete—		
Cargo	2	6,500
Tankers	8	56,283
Total concrete	10	62,783
Grand total	1,724	11,287,125

Tugs owned and controlled.

	Active.	Tied up.	Total.
Steel	9	25	34
Wood (ocean)		2	2
Wood (harbor)	14	2	16
Total	23	29	52

TABLE I4.—*Distribution by trade allocation, Dec. 31, 1921.*

ACTIVE.

	Number.	Dead weight.
OWNED VESSELS.		
Trade region:		
Northern Europe	140	1,153,244
Southern Europe	31	241,967
Africa	8	65,124
British India	8	84,349
East India	4	33,449
Australian	11	99,935
East Asian	2	26,000

Digitized by Google

TABLE I4.—*Distribution by trade allocation, Dec. 31, 1921*—Continued.

ACTIVE—Continued.

	Number.	Dead weight.
OWNED VESSELS—continued.		
Trade region—Contd.		
Orient	52	520,785
South America	39	297,083
West Indies	13	54,192
European tramps	2	8,850
Foreign service	20	114,298
Triangular service	5	41,482
Domestic service	13	70,958
Tankers	55	506,807
Total	403	3,318,442
OWNED BUT NOT CONTROLLED.		
Assigned to Army	1	8,700
Chartered to private operators	21	104,436
Total	22	113,136
Grand total	425	3,431,578

INACTIVE.

In charge of caretakers	1,272	7,623,922
Awaiting delivery to caretakers	5	56,372
Awaiting delivery to purchaser	1	5,610
Awaiting order of reconditioning	1	15,000
Awaiting assignment	16	127,200
Under custody United States Shipping Board as mortgagee	4	27,433
Total	1,299	7,855,547
Grand total	1,724	11,287,125

Status of all vessels controlled as of Dec. 31, 1921.

ACTIVE.

	Number.	Dead weight.
Steel vessels:		
Operating and specified service (United States ports to foreign ports)	276	2,321,367
United States coastwise	6	22,466
Between foreign ports	19	105,540
Intercoast	5	40,782
Tankers	49	449,299
Tankers and coastwise service	1	7,540
Cargo vessels at sea, assigned for tie-up	9	65,597
Tankers at sea, assigned for tie-up	3	30,678
Army service	1	8,700
Chartered to independent companies	21	104,436
Total	390	3,156,485

TEMPORARILY INACTIVE.

Steel vessels:		
Awaiting fixture	1	7,678
Repairing or awaiting repairs	21	173,120
Cargo vessels awaiting tie-up (in port)	10	69,744
Tankers awaiting tie-up (in port)	2	19,211
Other delays	1	5,340
Total	35	275,093

Digitized by Google

Status of all vessels controlled as of Dec. 31, 1921.

INACTIVE.

	Number.	Dead weight.
Steel vessels:		
Tied up (cargo)	955	6,204,045
Tied up (cargo) but assigned	11	91,328
Awaiting delivery to caretakers	5	56,372
Awaiting assignment	16	127,200
Tankers tied up	29	263,891
Tankers awaiting assignment	2	19,784
Ship sales delays (cargo)	1	5,610
Ship sales delays (tanker)	1	12,000
Awaiting orders or reconditioning	1	15,000
Under custody of United States Shipping Board as mortgagee	4	27,433
Total	1,025	6,822,663
Wood and composite vessels:		
Tied up in United States ports	263	966,601
Tied up in foreign ports	1	3,500
Total	264	970,101
Concrete vessels:		
Cargo (tied up)	2	6,500
Tankers (tied up)	8	56,283
Total	10	62,783
Grand total	1,724	11,287,125

TABLE 15.—*Distribution of fleet by form of control (excluding vessels in Army and Navy service, tugs, and barges), Dec. 31, 1921.*

	Number.	Dead weight.
Managing agency agreement	339	2,586,350
Management and operation	42	399,014
Bareboat charter	21	99,401
Special agreements	10	130,008
Total	412	3,214,773

Number of active operators at Dec. 31, 1921, 60.

Companies operating United States Shipping Board vessels, Dec. 31, 1921.

Company.	Number.	Dead weight.	Company.	Number.	Dead weight.
Baltimore Steamship Co.	6	35,377	Matson Navigation Co.	2	26,000
Barber Steamship Lines (Inc.)	15	142,785	McAllister Bros.	12	102,096
Black Diamond Steamship Corporation	8	74,975	Mississippi Shipping Co.	9	73,166
Blake, W. A., & Co.	3	25,137	Moore & McCormack Co. (Inc.)	8	53,290
Hull, A. H., & Co.	11	88,117	Munson Steamship Lines	12	107,731
Carolina Co.	4	30,003	New York & Argentine Steamship Co.	1	8,736
Clyde Steamship Co.	14	38,616	New York & Cuba Mail Steamship Co.	4	16,515
Columbia-Pacific Shipping Co.	8	73,437	North Atlantic & Western Steamship Co.	6	48,607
Columbus Shipping Co.	13	127,652	Oriental Navigation Co.	1	7,643
Cosmopolitan Shipping Co.	11	88,314	Pacific Mail Steamship Co.	15	117,237
Export Steamship Corporation	6	46,800	Pacific Steamship Co.	22	196,935
Export Transportation Co.	6	48,897	Page & Jones	5	33,207
General Steamship Corporation	7	49,808	Richmond & New York Steamship Co.	2	5,750
Harriss Magill & Co. (Inc.)	2	10,378	Ripley, Daniel, & Co.	4	31,300
International Freighting Corporation	8	56,034	Rogers & Webb	5	43,672
Kerr Steamship Co. (Inc.)	13	107,263			
Lykes Bros.	21	178,260			

Digitized by Google

Companies operating United States Shipping Board vessels, Dec. 31, 1921.—Contd

Company.	Number.	Dead weight.	Company.	Number.	Dead weight.
Sgitcovich, S., & Co	11	104,286	United States Shipping Board	1	7,500
Sprague, C. H., & Son	3	23,334	United States & Australasia Lines	9	83,225
States Marine Co. of Baltimore	3	16,034	Walker & Daly	13	128,200
Strachan Shipping Co	2	17,209	Waterhouse, Frank, & Co	2	17,041
Strathers & Barry	11	109,195	Waterman Steamship Co	7	57,930
Susquehanna Steamship Co	5	30,219	Wessel, Duval & Co	3	23,340
Swayne & Hoyt (Inc.)	3	24,972	Williams, Dimond & Co	1	10,975
Tampa Inter-Ocean Steamship Co	8	64,917	Winchester, J. H., & Co	5	37,142
Trosdale, Plant & La Fonta	21	172,289	Mallory Transport Line (Inc.)	5	39,516
United American Lines (Inc.)	4	33,449	Total	[1] 381	2,985,264

[1] Excludes 31 vessels operated not as M. A. or M. & O.

TABLE I6.—*Statement showing freight rates in effect between the United States, North Atlantic ports, and the United Kingdom and Mediterranean ports, 1912–1921.*[1]

Year.	United Kingdom.		Mediterranean.	
	General cargo.	Flour.	General cargo.	Flour.
1912	15s. per ton W. M., ship's option.	15 cents per 100 pounds.	20s. per ton W. M., ship's option.	15s. per ton of 2,240 pounds.
1913	....do....	17 cents per 100 pounds.	....do....	Do.
1914	17s. 6d. per ton W. M., ship's option.	19 cents per 100 pounds.	....do....	Do.
1919	50 cents per cubic foot.	$1 per 100 pounds...	85 cents per cubic foot.	$1 per 100 pounds.
1920	....do....	....do....	65 cents per cubic foot.	$1.25 per 100 pounds.
1921	55 cents per cubic foot.	19 cents per 100 pounds.	50 cents per cubic foot.	60 cents per 100 pounds.

[1] Service largely discontinued during 1915, 1916, 1917, and 1918.

Table I6 gives a history of the ocean-going freight rates between North Atlantic ports to the United Kingdom and Mediterranean ports, 1912 to 1921, inclusive, on general cargo and flour, these two classifications covering the principal commodities handled. The ocean-going tonnage in the export trade handles the usual commodities, export and import, and, as indicated in Table I4, covers the principal trade routes of the world. There can be no question about the desirability of maintaining upon a sound financial basis an adequate merchant marine flying the American flag. The development and maintenance of our ocean-going carrying trade is inextricably linked with the maintenance of a sufficient merchant marine to meet the requirements of the Government during time of war, and is all the more necessary now that the naval armaments have been limited by treaty. The reserve provided by an effective merchant marine must be maintained. This can only be done by the effective operation upon a sound economic basis during times of peace of as many vessels as can be successfully maintained in competitive traffic with such reasonable financial assistance as the Nation can afford to extend.

PANAMA CANAL.

The report of the Governor of the Panama Canal Zone for the fiscal year ending June 30, 1921, indicates that the canal cost

Digitized by Google

the American Government to that time $442,907,414, or approximately 16 per cent of the cost of the vessels purchased and constructed by the United States Shipping Board. The increasing volume of traffic being handled through the Panama Canal bears witness to the wisdom of its founders and to the practical value of this contribution to the advancement of civilization. Its permanent value, not alone to the United States but to the entire world, far outweighs the cost.

The revenue derived from tolls is now considerably in excess of the expense of operation and maintenance, but has not reached an amount that will afford a reasonable return upon the investment, the calculation indicating a deficit for the fiscal year ending June 30, 1921, in excess of $15,000,000, when 4 per cent upon the investment is included. It is estimated that the maximum capacity of the canal is 16,550 vessels per annum. Using the average net tonnage of 3,300 tons, Panama Canal measurement, and 2,700 tons registry measurement, this amounts to 49,060,000 tons Panama Canal measurement or 40,635,000 tons registry measurement. The average approximate cargo tonnage per ship, including vessels in ballast, is 3,285 tons. In the same proportion the cargo tonnage of 16,550 vessels would be 63,303,750 tons, which could be increased by the heavier loading of vessels. During the fiscal year 1921, 11,599,214 tons of cargo passed through the canal, this being 18 per cent of its maximum capacity. Upon this tonnage $11,276.889 in tolls was assessed, or an average of 97.2 cents per ton of cargo.

TABLE 17—*Statement showing cargo tonnage and tolls assessed on vessels of principal nations passing through the Panama Canal during the first seven years of its operation.*

Fiscal years ending June 30—	United States.		British.		Norwegian.	
	Tolls assessed.	Cargo tonnage.	Tolls assessed.	Cargo tonnage.	Tolls assessed.	Cargo tonnage.
1915	$2,002,845.77	2,187,904	$1,847,341.10	2,200,514	$141,066.91	166,522
1916	724,219.01	848,857	1,140,395.07	1,570,660	149,357.56	229,368
1917	1,238,322.63	1,475,725	2,595,158.60	3,393,750	448,948.53	597,581
1918	1,713,827.23	2,098,277	2,498,596.49	2,615,675	823,748.57	1,090,823
1919	2,327,261.48	2,758,886	1,954,715.87	1,876,939	460,057.68	577,679
1920	3,805,924.77	4,547,140	2,805,018.50	2,830,268	371,408.79	404,323
1921	4,784,577.35	5,163,025	3,989,281.58	3,738,257	523,311.94	637,887
Total	16,596,978.24	19,079,814	16,830,507.21	18,226,063	2,917,899.98	3,704,183
July to October, 1921, inclusive	1,499,774.73	1,460,772	1,262,582.37	1,018,824	95,418.79	70,40

Fiscal year ending June 30—	Japanese.		Other nations		Grand total.	
	Tolls assessed.	Cargo tonnage.	Tolls assessed.	Cargo tonnage.	Tolls assessed.	Cargo tonnage.
1915	$30,260.40	42,600	$346,036.01	290,914	$4,367,550.19	4,888,454
1916	88,229.68	117,780	305,888.30	327,449	2,408,089.62	3,094,114
1917	305,702.63	446,358	1,039,330.66	1,145,149	5,627,463.05	7,058,563
1918	248,063.30	407,399	1,154,617.56	1,319,857	6,438,853.15	7,532,031
1919	364,622.57	503,427	1,066,170.99	1,199,790	6,172,828.59	6,916,621
1920	543,936.93	726,338	987,644.16	866,430	8,513,933.15	9,374,499
1921	655,176.51	758,617	1,324,542.53	1,301,428	11,276,889.91	11,592,214
Total	2,235,992.02	3,002,519	6,224,230.21	6,451,017	44,805,607.66	50,463,496
July to October, 1921, inclusive	436,529.15	420,488	405,516.01	318,439	3,699,821.05	3,288,924

Digitized by Google

Table I7 and chart I1 indicate the cargo tonnage and the amount of tolls assessed each year, 1915 to 1921, inclusive, classified as to the

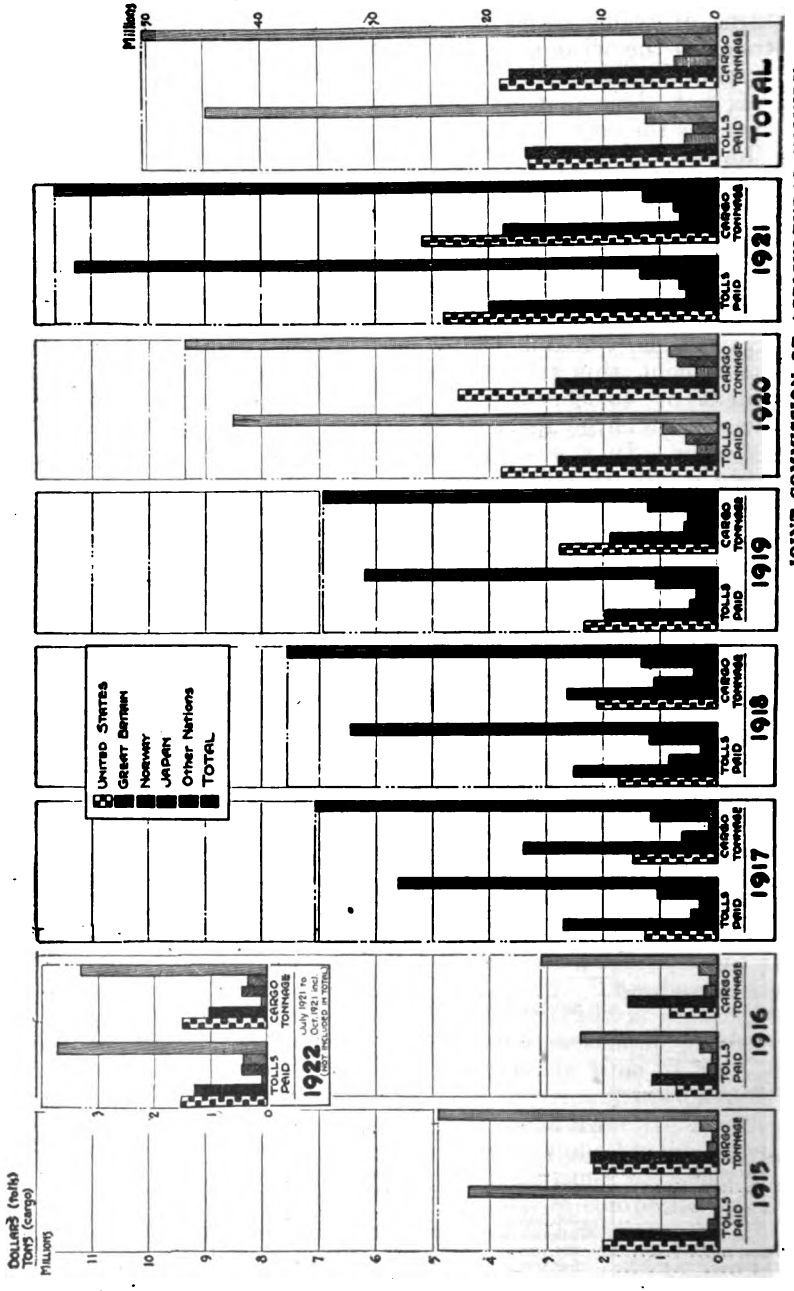


Chart I 1.—PANAMA CANAL—CARGO TONNAGE AND TOLLS ASSESSED UNITED STATES AND FOREIGN VESSELS, 1915–1922 (FISCAL YEARS).

four principal nationalities of the vessels passing through the canal and the total of all other nationalities. It will thus be seen that the number of American vessels using the canal is increasing more

Digitized by Google

rapidly than those of other nations, and in 1921 handled 44.5 per cent of the tonnage and paid 42.4 per cent of the total tolls collected. The per cent handled by vessels of each nationality to the total for the 7-year period is as follows:

Nation.	Tolls paid.	Cargo tonnage.
United States	37.0	37.8
Great Britain	38.4	36.1
Japan	4.0	5.9
Norway	6.5	7.3
All others	13.8	12.7

Table I8 and Table I9 show the commercial traffic through the canal in which the United States is most interested. Data includes the trade routes, the number of ships and tons of cargo for the fiscal years 1920 and 1921, and the four months ending October 1921. There are approximately 20 steamer lines operating between Atlantic and Pacific ports with weekly, semimonthly, and monthly sailings. On seven of these lines whose statistics are available the monthly movement ranges from 3,000 to 15,000 tons, of which agricultural products comprise 15 to 38 per cent, the average being 22.5 per cent. The freight rates are approximately 66 to 80 per cent of the all-rail transcontinental rates, the average water haul in this service being something over 6,000 miles. It is unquestionably true that the lower freight rates on agricultural and other products moving via the canal have in many cases proved a direct benefit to the producer. For example, the route through the Panama Canal has enabled the apple growers in the Pacific Northwest to materially increase their export shipments to the European countries by shipping directly from such ports as Seattle, Wash., and Portland, Oreg., to European ports, thus providing an outlet for surplus production.

TABLE I8.—*Commercial traffic through the Panama Canal moving in the loading trade routes.*

Trade routes.	Fiscal year 1920.		Fiscal year 1921.		July to October, 1921.	
	Number of ships.	Tons cargo.	Number of ships.	Tons cargo.	Number of ships.	Tons cargo.
East coast of United States to west coast of South America:						
Atlantic to Pacific	295	929,193	253	933,261	37	38,984
Pacific to Atlantic	215	684,715	239	975,597	43	134,485
Total	510	1,613,908	492	1,908,858	80	173,469
East coast of United States to Far East:						
Atlantic to Pacific	194	1,024,777	187	1,213,906	65	412,762
Pacific to Atlantic	51	261,692	74	428,044	16	108,571
Total	245	1,286,469	261	1,641,950	81	521,333
United States coastwise:						
Atlantic to Pacific	65	301,220	177	698,429	85	275,446
Pacific to Atlantic	172	789,840	145	673,959	71	432,376
Total	237	1,091,060	322	1,372,388	156	707,822

Digitized by Google

TABLE 18—*Commercial traffic through the Panama Canal, etc.*—Continued.

Trade routs.	Fiscal year 1920.		Fiscal year 1921.		July to October 1921.	
	Number of ships.	Tons cargo.	Number of ships.	Tons cargo.	Number of ships.	Tons cargo.
West coast of United States and Europe:						
Atlantic to Pacific	30	97,902	80	144,591	71	31,087
Pacific to Atlantic	154	469,429	158	1,154,840	93	697,900
Total	184	567,331	238	1,299,431	164	728,987
East coast of United States and Australasia:						
Atlantic to Pacific	70	384,760	90	620,428	18	91,431
Pacific to Atlantic	13	71,772	27	147,877	4	11,253
Total	83	456,532	117	768,305	22	102,684
East coast of Mexico and west coast of United States:						
Atlantic to Pacific	16	107,883	27	261,205	3	9,121
Pacific to Atlantic	10	33,634	40	8,155	6	30,357
Total	26	141,517	67	269,360	9	39,478

TABLE 19.—*Statement showing the classification of cargo passing through the Panama Canal.*

[Includes 72 per cent of all cargo, Atlantic to Pacific, and 93 per cent of all cargo, Pacific to Atlantic.]

Commodity.	October, 1921.	September, 1921.	August, 1921.	July, 1921.
Atlantic to Pacific:	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Oil—				
Crude	68,891	17,981	36,454	14,491
Refined	26,961	19,781	28,685	15,635
Manufactured goods—				
Iron and steel	48,074	50,488	28,373	52,574
Machinery, textiles, etc	14,659	19,331	8,312	21,440
Coal and coke	21,512	16,040	24,066	8,258
Cotton	14,725	19,207	34,482	26,683
Ammonia	12,072	4,749	6,997	921
Metals	8,880	8,467	5,286	8,575
Phosphates	6,001	5,888	13	.....
Coffee	3,071	2,746	1,180	737
Glucose	2,899	576	91	291
Tobacco	2,879	2,452	893	625
Paper	2,813	1,120	1,508	1,574
Cement	2,681	1,834	3,511	1,871
Liquors	1,397	1,234	174	1,419
Other and general	136,922	128,736	137,945	103,946
Total cargo	374,437	300,720	317,970	258,440
Pacific to Atlantic:				
Wheat	128,375	75,486	80,231	99,267
Barley	67,092	107,831	77,661	27,780
Canned goods—				
Fish	32,761	17,232	7,972	10,596
Fruit	25,547	35,427	10,921	10,482
Miscellaneous	2,523	4,302	2,875	2,906
Lumber	56,606	26,750	35,064	31,699
Nitrate	54,256	22,758	39,349	26,051
Beans, peas, lentils, etc	20,547	6,774	5,571	5,762
Flour	19,000	15,101	18,946	28,940
Sugar	20,261	6,657	49,406	48,394
Phosphates	14,057	.....	6,650	7,500
Cold storage—				
Beef and mutton	10,431	6,534	21,797	21,723
Miscellaneous	8,308	4,066	9,861	12,102
Cotton	12,592	5,392	4,140	3,261
Metals	11,078	10,516	21,425	11,301
Copra	9,196	6,817	3,115	2,450
Wool	9,061	5,522	10,468	14,080

Digitized by Google

TABLE I9.—*Statement showing the classification of cargo passing through the Panama Canal*—Continued.

Commodity.	October, 1921.	September, 1921.	August, 1921.	July, 1921.
Pacific to Atlantic—Continued.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Seed, cotton sesame, etc.	7,936	2,347	5,358	5,792
Coffee	4,594	6,013	6,710	6,675
Fruit, fresh and dried	4,162	6,664	5,192	3,274
Tea	3,950	546	444	259
Cacao	3,844	4,327	1,469	4,072
Ivory nuts	2,811	3,164	1,492	2,368
Other and general	82,330	73,948	95,196	63,838
Total cargo	611,338	454,174	521,303	450,542

COASTWISE AND INLAND SHIPPING.

In addition to the coastwise traffic through the Panama Canal, which differs to some extent from ordinary coastwise service, there is the usual coastwise movement between Atlantic ports and between Pacific ports. There are approximately 100 steamship lines engaged in coastwise traffic on the Pacific, Atlantic, and Gulf coasts. The all-water rates are lower than the all-rail rates to many of the larger markets, yet the bulk of shipments of farm products is all-rail, largely because of quicker delivery and better condition of perishable products upon reaching destination. Over 20 of the steamship lines operate between North Atlantic and Virginian ports, and in many instances agricultural products represent as much as 75 per cent of the cargo. The water-line service between Virginian ports and the principal North Atlantic ports affords satisfactory and prompt transportation to those markets, and is patronized to a very great extent by farmers of Virginia and other South Atlantic States. There are about 12 steamship lines operating between South Atlantic and Gulf ports handling general cargo. There are 7 steamship lines operating between North Atlantic and South Atlantic and Gulf ports handling general cargo, including cotton, cotton seed, sugar, rice, tobacco, onions, potatoes, and peanuts. These lines afford lower freight rates than the rail lines, and undoubtedly have effected a broadening of the markets for the products handled There are also a number of steamship lines operating between New York and New England ports handling general cargo and competing to a considerable extent with rail lines. On the Pacific coast there are 27 steamship lines, including the service to and from Alaska. These lines handle a very considerable movement of citrus fruit and apples from Oregon and Washington, together with general cargo consisting principally of the staple articles of food Owing to the impossibility of securing complete data covering the operations of the various steamship lines, it has been necessary to select a number of the representative lines in each of the several districts.

Tables I10 and I11 give a recapitulation of the operations of steamship lines plying the Great Lakes and in coastwise service on the Atlantic, Pacific, and Gulf coasts; also the tonnage handled under the several classifications of the Interstate Commerce Commission

Digitized by Google

and a description of the number and tonnage of the operating units, such as tugboats, steamboats, and steamships, etc. Table 110 also gives the information separately for the Atlantic and Gulf and Pacific coast and the Great Lakes.

Table 112 gives a summary of 15 of the principal commodities handled on the Great Lakes, on the rivers of the Pacific coast, on the Gulf coast, on the Mississippi River and its tributaries, and on all other inland waterways.

Digitized by Google

TABLE 112.—*Shipments by inland water transportation classified by districts and principal commodities for calendar years 1920 and 1916.*[1]

[Quantities expressed in short tons.]

Classifications.	Great Lakes.		Rivers, Atlantic coast.		Rivers, Gulf coast.		Rivers, Pacific coast.		Mississippi River and tributaries.		All other inland water.		Grand total.	
	1920	1916	1920	1916	1920	1916	1920	1916	1920	1916	1920	1916	1920	1916
Cement	222,890	198,722	3,097	30,784	1,655	2,844	4,649	6,336	26,976	3,060	97	4,332	259,364	246,078
Copper	52,625	94,112	198	5									52,823	94,117
Coal	[2] 27,490,493	35,449,291	463,662	1,439,262	170,437	198,615		5,084	12,039,400	7,082,054	169,831	121,395	40,333,823	44,295,707.
Cotton			18,590	5,788	682	4,682			24,674	43,399	53	2,327	44,359	56,196
Fertilizer			151,283	154,189	9,818	19,547		75		8,087	3,957	25,003	165,058	206,901
Grain	3,230,041	2,572,803	24,132	40,021	5,673	31,987	154,800	165,214	63,411	93,340	929	13,316	3,478,986	2,916,281
Iron ore and steel	64,582,829	64,097,715	9,796	88,422		6,955		918	172,565	209,618	330	10,054	64,765,520	64,413,682
Limestone	5,813,665	3,514,447											5,813,665	3,514,447
Lumber[3]	238,476	562,180	680,590	876,940	1,977,721	1,949,166	1,724,152	1,770,755	1,273,814	1,387,846	158,631	421,670	6,053,384	6,968,557
Petroleum	807,258	[4]	438,791	[4]	59,220	[4]	1,559,147	[4]	65,433	[4]	4,922	[4]	2,934,771	[4]
Sand, stone, and gravel	2,401,788	847,325	2,578,393	2,281,386	156,523	134,627	123,210	230,958	7,716,611	4,114,292			12,976,525	7,558,588
Sugar	43,325	80,947	309	724	101,425	175,910	2,032	3,383	46	398		868	147,137	262,230
Tobacco	2		477	37	11				1,613	2,400	4		2,107	2,437
Wood pulp	57,710	40,570	81,902	102,529			25,610	33,001		7,310	1,038	34,961	166,260	218,371
All other	6,198,584	3,391,538	3,134,545	3,125,135	302,673	827,524	336,006	962,878	4,181,459	1,629,939	2,980,530	259,619	17,133,797	10,186,633
Total	111,139,686	110,849,250	7,586,125	8,095,222	2,785,838	3,351,857	3,929,606	3,168,602	25,566,002	14,581,743	3,320,322	893,545	154,327,579	140,940,219

[1] Report of the Chief of Engineers of United States Army for fiscal years ended June 30, 1921 and 1917, respectively; car ferry shipments not included.
[2] Geological survey of bituminous coal shows low production for year 1920.
[3] Includes tonnage of logs, lath, lumber, shingles, ties, etc., which was rafted.
[4] Petroleum not shown separated for 1916 and is included in "All other."

Digitized by Google

TABLE I13.—*Carriers by water—Freight revenue per ton of freight handled.*

Line.	1914	1915	1916	1917	1918	1919	1920
Atlantic and Gulf:							
Clyde	$2.72	$2.81	$3.85	(1)	(1)	(1)	(1)
Mallory	4.38	4.22	2.51	(1)	(1)	(1)	(1)
Lehigh Valley	1.91	2.67	.85	$1.04	$2.27	$2.34	(2)
Old Dominion	2.03	2.24	2.44	2.59	3.93	4.06	$5.63
Hartford & New York	(1)	1.17	1.28	1.61	1.77	2.44	2.70
New England S. S.	(1)	1.99	2.14	2.38	2.27	4.10	4.45
M. & M. T. Co.	3.06	3.16	3.36	3.77	5.33	(1)	7.04
Pacific coast:							
Alaska Steamship Co	(1)	2.49	5.22	4.73	5.32	7.51	12.45
Pacific Steamship Co	(1)	(1)	4.70	4.34	5.68	7.72	7.75
Great Lakes:							
Great Lakes Transit	(1)	(1)	1.73	1.81	2.43	2.76	2.59
Detroit & Cleveland	(1)	2.52	2.93	4.15	6.00	6.92	7.90
White Star Line	(1)	2.31	4.30	4.86	4.42	5.78	4.62
Mississippi River:							
United States War Department War River service	(1)	(1)	(1)	(1)	(1)	2.45	2.85
St. Louis & Tennessee Packet Co	(1)	2.99	2.91	4.22	5.49	6.28	5.64

[1] Not available.
[2] Operations included in Lehigh Valley Railroad report.

Table I13 gives the freight revenue per ton of freight handled in the several districts, indicating the name of the several steamship companies.

In addition to these specified operating statistics, Table I14 shows the amount of Federal expenditures on canals and inland waterways for each year, 1913 to 1921, inclusive, the number of miles of navigable canals or rivers, as the case may be, and the average expenditure per navigable mile for each classification for the entire period.

The total expenditures of the United States Government for river, harbor, and canal improvement from 1824 to 1900 was $380,600,093; for the years 1900 to 1912, inclusive, $322,344,708; for the years 1913 to 1921, inclusive, $369,367,865, or a total of $1,072,312,666. These expenditures appear to have been made without regard to the requirements of commerce. Without doubt the improvements have proved valuable to the country, but they have not had a value commensurate to the expenditures. As a concrete example of this, the Mississippi River affords possibly the best illustration. In addition to the necessary expenditures on this waterway for flood control, vast sums have been spent in deepening and widening channels, removing snags and other obstructions to keep the stream open for commerce which has not materially developed.

Digitized by Google

TABLE 114.—*Expenditures, United States Government canals and rivers.*[1]

Year.	Canals.			Waterways and rivers.		
	Number.	Expenditures.	Navigable.	Number.	Expenditures.	Navigable.
			Miles.			*Miles.*
1913	10	$2,394,286	372	18	$13,739,176	7,514
1914	10	2,045,879	372	18	20,655,575	7,514
1915	9	2,283,320	364	18	18,871,280	7,514
1916	10	1,510,216	372	18	15,252,985	7,514
1917	11	1,384,305	375	17	15,369,766	6,014
1918	11	752,971	375	18	13,558,261	7,514
1919	11	518,951	375	18	14,449,138	7,514
1920	10	1,153,015	370	17	19,605,694	6,014
1921	10	1,508,138	370	17	23,617,540	6,014
Total		13,551,081			155,119,415	

[1] Canals: Inland Waterway, Va. and N. C.; Brazos River Canal, Tex.; Sabine-Neches Canal, Tex.; Port Arthur Canal, Tex.; Black Rock Canal, N. Y.; Lake St. Clair Canal, Mich.; Portage Canal, Mich.; Benton Harbor Canal, Mich.; Lake Washington Canal, Wash.; Dalles-Celilo Canal, Oreg.; Cascades Canal, Oreg. Rivers: Connecticut, St. Johns, Cumberland, Chattahoochee, Apalachicola, Missouri, East River, Illinois, Yukon, Hudson, Savannah, White, Ohio, Potomac, Black, Willamette, Delaware, Mississippi, Columbia.

AVERAGE EXPENDITURES PER NAVIGABLE MILE.

Year.	Canals.	Waterways and rivers.	Year.	Canals.	Waterways and rivers.
1913	$6,436	$1,828	1919	$1,384	$1,923
1914	5,500	2,749	1920	3,116	3,260
1915	6,273	2,511	1921	4,076	3,927
1916	4,060	2,030			
1917	3,691	2,556	Total	36,544	22,588
1918	2,008	1,804			

In the past, attempt has been made to justify such expenditures because of their possible effect upon the rates of the rail carriers. A special report of the Board of United States Engineers (H. Doc. No. 50, 61st Cong., 1st sess.) contends that even if commerce were not developed on the waterway, the existence of such a waterway, ready for use, would so affect railroad rates as to amply justify the expenditure for construction.

No expenditure by the National Government is justified for the construction or improvement of a useless or idle waterway for the sole purpose of reducing railway rates. There are more direct and less expensive methods of accomplishing this particular result, and it is manifest that a policy of this character places a burden in taxation upon the public as a whole, taxes citizens who are not directly or indirectly benefited by such reduction in freight rates, and creates a false rate structure for the benefit of a few communities to the detriment of many.

Unless railway rates as a whole are reduced to a practical basis of water transportation, the burden of rate reductions secured by water competition is merely shifted to traffic to or from localities which can not use water transportation. This can be justified only by the actual economies of particular waterways and by permitting each section or community to have whatever advantages may be derived from their natural location.

Digitized by Google

Having in mind that the growth of our country has been largely due to efficient transportation methods, it would seem advisable that in the development of our waterways, funds for such development should be carefully expended and not solely with a view of a reduction of the rail rate, but rather with the idea of aiding in the general transportation scheme as creating self-sustaining means of transportation.

During the early war period, when it seemed that the transportation agencies of the country would be unable to handle the war tonnage, and private capital being unwilling to venture into so hazardous an undertaking, Congress appropriated money and authorized the purchase and operation of a steamship line on the Mississippi and Warrior rivers. Table I15 gives the cost of the floating equipment purchased for operation in the Mississippi River section and in the Warrior River section, together with additional equipment required and contracted for. Table I16 gives a recapitulation of the operating revenue, expenses, and net income on the operation of the Warrior River section, and Table I17 gives the same information for the Mississippi River section. Tables I18 and I19 give the average earnings per ton exclusive of towing service.

TABLE I15.—*United States Government owned and operated vessels—Mississippi and Warrior Rivers.*

Purchase price of floating equipment at inauguration of service, September, 1918:	
Mississippi River section, purchase price	$458,000
Warrior River section—	
Purchase price	[1] 453,241
Additions and betterments	330,000
Contract and purchase price of additional floating equipment actually acquired subsequent to September, 1918:	
Mississippi River section—	
Contract and purchase price	6,221,000
Additions and betterments	963,000
Warrior River section—	
Contract price	1,508,300
Additions and betterments	429,510
Amount obligated for additional floating equipment to be acquired:	
Mississippi River section—	
Contractual obligation	[2] 720,000
Additions and betterments	200,000
Warrior River section—	
Contractual obligation	[3] 244,400
Additions and betterments	60,000

[1] Includes amounts expended for 2 derrick barges, 1 collier, and 2 Gantry coal towers; service was begun in December, 1918, with 19 boats and barges; it was not until July, 1919, that the remainder acquired were ready for service.

[2] Two towboats still under construction, to be delivered in the near future; most of these amounts have been expended.

[3] One S. P. barge still under construction, to be delivered in the near future; most of these amounts have been expended.

Digitized by Google

TABLE 116.—*United States owned and operated vessels—Recapitulation of yearly operating revenues, expenses, and net income from inauguration of Warriar River section to December 31, 1921.*

	September, 1918, to June 30, 1919.	Year ending June 30, 1920.	Year ending June 30, 1921.	6 months ending Dec. 31, 1921.
Operating revenues, freight and miscellaneous	$99,685.30	$294,066.57	$445,221.63	$221,157.00
Operating expenses:				
Maintenance	38,307.47	216,776.94	331,809.70	.....
Transportation	91,627.57	325,087.57	496,517.15	.....
Charter	.....	2,782.98	18,700.20	.....
Traffic	5,364.47	20,991.80	16,314.57	.....
General	14,382.10	45,057.15	31,815.16	.....
Total operating expenses	149,681.61	610,696.44	[1] 895,153.78	[2] 505,514.72
Operating income [3]	49,996.31	316,629.87	449,932.15	.....
Other income	[4] 11,472.88	[4] 21,231.46	2,112.37	.....
Net income [3]	38,523.43	295,398.41	479,597.99	284,357.72
Tonnage handled	.....	.....	218,731	106,897

[1] Includes $90,111.77 for depreciation.
[2] Includes $73,622.15 for depreciation.
[3] Deficit.
[4] Debit.

TABLE 117.—*United States Government owned and operated vessels—Recapitulation of yearly operating revenues, expenses, and net income from inauguration of Mississippi River section to December 31, 1921.*

	September, 1918, to June 30, 1919.	Year ending June 30, 1920.	Year ending June 30, 1921.	6 months ending Dec. 31, 1921.
Operating revenues, freight and miscellaneous	$277,453.68	$538,714.83	$1,057,395.71	$1,070,409.61
Operating expenses:				
Maintenance	81,119.17	178,539.69	563,693.11	.....
Transportation	475,896.80	600,458.01	819,691.16	.....
Charter	79,764.56	147,855.95	30,105.84	.....
Traffic	33,119.55	158,509.11	69,227.45	.....
General	32,921.28	50,834.30	74,017.59	.....
Total operating expenses	702,821.36	1,136,197.06	[1] 1,556,735.15	[2] 1,094,095.27
Operating income [3]	425,367.68	597,482.23	499,339.44	.....
Other income	3,199.63	5,449.54	1,766.11	.....
Net income [3]	422,168.05	592,032.69	502,637.01	23,685.66
Tonnage handled	.....	.....	237,268	280,488

[1] Includes $264,491.30 for depreciation.
[2] Includes $213,010.53 for depreciation.
[3] Deficit.

Digitized by Google

TABLE I18.—*United States Government owned and operated vessels—Warrior River section—Average net revenue per ton (exclusive of towing and collier service).*

	Sept. 28 to Dec. 31, 1918.	Jan. 1 to June 30, 1919.	July 1 to Dec. 31, 1919.	Jan. 1 to June 30, 1920.	July 1, 1920, to June 30, 1921.
Southbound local	$0.51	$1.63	$1.45	$1.41	$1.97
Southbound interline	0	1.53	1.58	1.49	1.78
All southbound	.51	1.62	1.50	1.46	1.85
Northbound local	0	3.74	4.31	4.98	4.10
Northbound interline	0	0	0	1.14	1.79
All northbound	0	3.74	4.31	1.48	1.96
Average net revenue per ton, all north and south bound	.51	1.63	1.51	1.46	1.86
Collier service	.77	.85	.92	.61	.....
Ratio of interline tonnage southbound to all southbound	*Per cent.* 0	*Per cent.* 7.4	*Per cent.* 42.1	*Per cent.* 56.5	*Per cent.* .....
Ratio of interline tonnage northbound to all northbound	0	0	0	91.1	.....
Ratio of all interline to all north and south bound	0	7.4	42.1	56.9	.....

TABLE I19.—*United States Government owned and operated vessels—Mississippi River section—Average net revenue per ton (exclusive of towing).*

	Sept. 28 to Dec. 31, 1918.	Jan. 1 to June 30, 1919.	July 1 to Dec. 31, 1919.	Jan. 1 to June 30, 1920.	July 1, 1920, to June 30, 1921.
Southbound local	$2.81	$3.07	$2.86	$4.47	$3.95
Southbound interline	0	4.46	5.12	3.69	4.40
All southbound	2.81	3.11	3.02	4.39	4.11
Northbound local	5.46	4.41	4.06	4.27	5.40
Northbound interline	0	4.51	2.82	2.97	4.54
All northbound	5.46	4.47	3.44	3.34	4.87
All north and south bound	3.07	3.69	3.13	3.90	4.39
Ratio of interline tonnage southbound to all southbound	*Per cent.* 0	*Per cent.* 3.2	*Per cent.* 7.4	*Per cent.* 9.8	*Per cent.* .....
Ratio of interline tonnage northbound to all northbound	0	59.8	49.3	71.3	.....
Ratio of all interline to all north and south bound	0	27.2	17.5	33.7	.....

The Mississippi-Warrior River section handles a considerable quantity of grain and grain products originating at St. Louis, East St. Louis, and Cairo, and cotton originating at Memphis, all destined to New Orleans, the greater volume of the traffic being for export. As these agricultural commodities move only in considerable quantities in connection with the Mississippi River service, this report will deal largely with that service because of the practical absence of any movement of agricultural products along the Warrior River. There is also a movement of rice from points along the Mississippi River, likewise destined to New Orleans.

While through joint rail and water rates covering this traffic are applicable via the rail lines in connection with the barge line, the majority of this business moves up to the river points on either local or proportional rail rates, although there is some wagon cotton coming into places like Memphis, which is subsequently reshipped to New Orleans by water.

The following figures show the movement of these commodities for the periods indicated:

Digitized by Google

St. Louis and East St. Louis to New Orleans.

Grain:	Net tons.
September to December, inclusive, 1918	19,479
Calendar year 1919	41,098
Calendar year 1920	33,864
January to September, inclusive, 1921	117,262
Total	211,703
Flour: September, 1918, to September, 1921, inclusive	12,430

Memphis to New Orleans.

Cotton:	Bales
September to December, inclusive, 1918	0
Calendar year 1919	0
Calendar year 1920	55,456
January to September, inclusive, 1921	68,516
Total	123,972

During the same period there moved into New Orleans for export via the rail lines 41,157,990 net tons of grain, the water line, therefore, handling approximately 4.8 per cent of the traffic.

According to the New Orleans Cotton Exchange records, there were received via rail at New Orleans during the same period 4,765,721 bales of cotton, the movement by water representing, therefore, approximately 2½ per cent of the total.

The Mississippi River Barge Line was inaugurated during the period of Federal control of rail and water lines and its local rates (i. e., the all-water rates) were generally made 80 per cent of the all-rail rates between the ports, and the differences so arrived at were applied as differentials to the all-rail rates in establishing the rail-and-water rates in connection with the barge line via the various gateways.

At the present time the rate on grain from St. Louis and East St. Louis to New Orleans for export via the Mississippi River Barge Line is 3.6 cents per hundred pounds less than the all-rail rate, this being equivalent to 2.16 cents per bushel of wheat.

There is very little wheat reaching New Orleans for local consumption or domestic reshipment. It is obvious that grain reaching the elevators at New Orleans by river must be sold abroad in the same lots with grain reaching the elevators by rail, and that there could be but one price to the foreign customer, whether the grain reached New Orleans by river or otherwise. The conclusion that the exporter of the grain is securing the benefit of the water movement is not possible of successful contradiction.

As reflected in the figures there has been a very heavy deficit in the operations of these Government-owned river steamship lines. Statements do not include interest on the investment or similar items. For the period July 1, 1920, to December 31, 1921, an item to cover depreciation has been added to the maintenance account, based on 5 per cent per annum for steel equipment and 10 per cent for all wooden vessels. Upon completion of the expenditures of the present appropriations there will be an investment of $8,562,000 in the Mississippi River service and $3,125,451 in the Warrior River service. Adding 4 per cent interest charged against this investment will increase the deficit by over $342,000 per annum in the case of the Mississippi River service and $125,000 per annum for the Warrior River service.

Digitized by Google

This should not be considered an indictment against river or inland transportation. It has its place. Its development, however, should be placed upon a sound, economic basis and should not be for the sole purpose of reducing the rail rates. Inland waterways should be developed only where sufficient tonnage of heavy commodities exist or can be developed to justify the establishment of new transportation facilities.

GREAT LAKES.

Of the inland waterways of the country there can be no doubt that the Great Lakes are first in capacity and versatility and in territorial value. Of the total movement on the Great Lakes the products of agriculture, including grain and its products, furnish a comparatively small proportion of the whole, iron ore and coal furnishing the principal tonnage. Table 120 gives the tonnage of iron ore, coal, and grain handled on the Great Lakes annually, 1905 to 1920, inclusive.

TABLE 120.—*Movement of bulk freight on the Great Lakes, for the calendar years 1905 to 1920, inclusive.*

Year.	Iron ore.	Coal.	Grain of various kinds.	Total.
	Gross tons.	*Net tons.*	*Net tons.*	*Net tons.*
1905	33,476,904	14,401,199	6,112,859	58,007,070
1906	37,513,589	17,273,718	6,863,058	66,152,006
1907	41,290,709	21,486,927	7,010,937	74,743,458
1908	25,427,094	19,288,098	6,024,493	53,790,938
1909	41,683,599	18,617,396	6,651,245	71,954,222
1910	42,618,758	26,478,068	5,803,514	80,014,591
1911	32,130,411	25,700,104	6,959,465	68,645,629
1912	47,435,771	24,673,210	9,372,252	89,040,063
1913	49,070,478	33,362,379	11,697,160	100,018,464
1914	32,021,897	27,281,228	9,793,850	72,939,603
1915	43,318,904	26,220,000	11,098,000	80,195,875
1916	64,734,198	28,440,483	10,555,975	111,498,759
1917	62,498,901	31,192,613	7,161,716	105,351,596
1918	61,156,732	32,102,022	6,548,680	[1] 107,146,242
1919	47,177,395	26,424,068	6,091,703	[1] 85,343,953
1920	58,527,226	26,409,710	6,736,348	[1] 96,696,551

[1] In addition, the stone movement totaled 7,467,776 net tons in 1918, 6,407,285 net tons in 1919, and 7,821,980 net tons in 1920.

In considering these figures particular attention should be given to the so-called bulk-cargo carrying vessel. The latest figures, as published in the annual report of the Lake Carriers Association for the year 1921, show that there were 599 freight steamers and barges in service on the Great Lakes, with a total carrying capacity of 3,736,250 tons. During the years 1916 to 1919, inclusive, the subtractions for ocean service and other reasons amounted to 78 vessels, as against 22 launchings. Some of these vessels have since been returned to the Lakes from the salt-water service, and undoubtedly additional steamers will be made available in this way from time to time. These figures include only the bulk-cargo handling vessels and do not take into consideration the package-freight carriers.

The Lake Superior ports of Duluth, Superior, Fort William, and Port Arthur and the Lake Michigan ports of Chicago and Mil-

Digitized by Google

waukee are directly accessible to the great grain fields of the West and Northwest and the milling industries of that territory; while the eastern ports of Montreal, Buffalo, and Erie give not only access to transatlantic vessels for exporting grain and flour, but serve as distributing points for the large consuming territories of the Eastern States.

The first record of a shipment of wheat from Lake Superior ports, by water, to lower lake ports, is said to have been in the year 1870, consisting of a cargo of 49,700 bushels, but since that time the well-known improvements in the canals and locks at Sault Ste. Marie have made the route available for vessels of large capacity, until in 1920 there was a record of one cargo of 485,000 bushels of wheat moved from Fort William to Georgian Bay.

Dealing with the practical phases of Great Lakes transportation, it would seem wise to take up first the question of cost. As the great bulk of the grain is moved under charters, it is quite evident that the cargo rates per bushel have been based on the number of boats available for the trade. Charters for the season, such as are made for ore or coal in large quantities, are not characteristic of the grain-carrying trade. When grain is wanted for any particular vessel, or when a vessel is wanted for the consignment of grain, the cargo rate depends upon the supply of or demand for vessels; in other words, upon what happens to be the immediate conditions, the number of boats available, or the urgency of the shipment. The rate thus made per bushel for forwarding from any western lake port to any eastern lake port is known as the "going rate," and is a matter of public information on the various boards of trade at the points of shipment, and remains the standard only until altered by a change in the conditions above mentioned.

TABLE I21.—*Lowest and highest freight rates in cents per bushel on wheat by lake from Duluth to Buffalo.*

[Compiled for 1885-1908 from annual reports of the Buffalo Merchants' Exchange, as published in Bulletin No. 81, Bureau of Statistics, U. S. Department of Agriculture, issued November 18, 1910. From 1909 to 1920, inclusive, taken from the records of the board of trade, Duluth, Minn.]

Year.	Lowest.	Highest.	Year.	Lowest.	Highest.	Year.	Lowest.	Highest.
1885	1.50	5.00	1898	1.00	3.50	1910	1.00	2.00
1886	3.25	8.00	1899	2.50	6.00	1911	.875	3.00
1887	5.00	8.00	1900	1.50	3.75	1912	1.125	4.00
1888	2.00	5.00	1901	1.125	3.75	1913	1.125	3.50
1889	2.00	5.00	1902	1.00	2.25	1914	.75	3.00
1890	2.00	5.00	1903	1.125	2.75	1915	.875	6.00
1891	1.25	9.50	1904	1.00	5.00	1916	3.00	6.00
1892	2.25	4.00	1905	1.25	4.00	1917	3.00	7.00
1893	1.25	3.50	1906	1.75	3.00	1918	4.00	5.50
1894	1.25	3.00	1907	1.00	2.50	1919	3.00	5.00
1895	2.00	6.00	1908	1.00	3.50	1920	4.00	7.00
1896	1.25	3.00	1909	1.00	3.00	1921	1.75	7.00
1897	1.00	2.50						

A record of the lowest and highest freight rates in cents per bushel on wheat from Duluth to Buffalo (as characteristic of the cargo grain rates) from the year 1885 to the year 1920, inclusive, is shown in Table I21, and from this exhibit it will be seen that during these years the rate per bushel has varied from three-fourths cent per

Digitized by Google

bushel to 9½ cents per bushel; or, looking at it from another viewpoint, in 1914 (before the World War) the rate was as low as three-fourths cent per bushel, while in 1920 the lowest was 4 cents per bushel.

Grain moving in large vessels destined to Montreal or Quebec is ordinarily transferred into smaller vessels at Port Colborne, the entrance to the Welland Canal, or delivered to Canadian rail carriers at the Georgian Bay ports, and during the past season (1921) the rate from Port Colborne, all water, to aboard ship at Montreal has ranged from 6½ to 7½ cents per bushel, while the Canadian rail lines have made rates slightly higher than these rates from Georgian Bay ports to Montreal and Quebec.

The export rate on wheat from Buffalo to New York was, at the beginning of the 1921 season, 12.1 cents per bushel, but was reduced to 9.1 cents per bushel on August 9, 1921.

By reason of the greatly reduced movement of iron ore during 1921, there has been an amplitude of boats on the Great Lakes for the grain-carrying trade, and the rate, which reached a maximum in 1920, has not averaged more than 1¾ cents per bushel this season, so that the low cost of transportation from western lake ports to Montreal is at present evident.

It is the only all-water route from the western lake ports to the Atlantic seaboard and naturally sets the measure of charges which may be expected to carry the same character of traffic to the middle Atlantic ports by rail from the western lake ports. It is evident, therefore, that whatever economies there may be in the transportation of bulk grain on the Great Lakes, the shipping and consuming public does not receive the benefit of such economy except in times of slack business or during a period in which there is a plentiful supply of vessels.

Prior to the summer of 1920 (when the lake rates were very high, because of the demand for vessels, and the rail rates had not been increased under the transportation act) there was so little difference between the charge for the movement by water and the movement via all-rail from Chicago, that the rail carriers were urged to reduce their rates from the eastern lake ports to seaboard (commonly known as ex-lake rates) to avoid the danger of pressure on the all-rail route already taxed to the utmost in the transportation of the country's traffic.

Upon careful consideration of the conditions set forth above, we come to the following conclusions:

First. That the transportation of grain in large cargoes over the Great Lakes from the grain-originating territory to the export and consuming destinations is of great economic value, particularly from the Lake Superior ports, from which the rail movement would be long and expensive.

Second. That the all-water route to Montreal inevitably acts as a check on the rates via lake and rail, or all rail, to other Atlantic ports, and in this way serves to control transportation costs on grain.

Third. That the transportation of bulk grain across the Great Lakes undoubtedly assists in increasing the available car supply through the release of cars at Lake Michigan and Lake Superior ports, thus permitting their return to the grain fields.

Digitized by Google

Fourth. That the weaknesses of the water route are:

(*a*) It is only available during the summer time and not during cold weather when navigation is closed by ice.

(*b*) There is no control of the lake cargo charges, and therefore no accurate estimate can be made of the expense at any time for the transportation of grain over the lakes. Furthermore, the history of the situation on the Great Lakes during the war has proven that the general claim that water transportation serves to relieve the rail carriers can not be absolutely relied upon, because through lack of control of their charges there is an inclination on the part of lake carriers to exact the highest rates procurable, even to the point of only taking what is left after the rail lines are congested.

(*c*) The shipping and consuming public does not at all time secure the benefit of whatever economy there may be in the transportation of bulk grain across the Great Lakes.

As to the grain products, or, we might say flour, the condition is somewhat different, because flour does not move under charter in cargo lots as does grain, but is ordinarily carried by the regular packet boats of the established lake transportation lines.

As stated, the first record of wheat shipped via lake from Lake Superior was in 1870, and the year's business was 49,700 bushels. During 1871 to 1875 an average of more than 1,000,000 bushels of wheat and 2,000,000 bushels of grain and flour were shipped through the canals at Sault Ste. Marie. This total includes flour reduced to its equivalent in wheat by estimating 1 barrel of flour to be the product of 4½ bushels of wheat. (See Tables I22 and I23.)

TABLE I22.—*Shipments of grain and flour through St. Marys Falls Canals, 1871–1909.*[1]

Year.	Wheat.	Other grain.	Flour.	Total grain and flour.
Average:	*Bushels.*	*Bushels.*	*Barrels.*	*Bushels.*
1871–1875	1,279,528	292,864	165,002	2,314,901
1876–1880	1,980,763	902,918	397,960	4,674,501
1881–1885	8,069,260	511,520	864,972	12,473,154
1886–1890	18,626,716	1,538,095	2,198,127	30,056,383
1891–1895	40,876,147	2,995,568	6,897,405	74,910,037
1896–1900	56,081,480	24,918,347	7,891,376	116,511,019
1901–1905	61,835,662	31,371,512	6,824,245	123,916,276
1906–1909	100,425,642	46,946,132	6,454,668	176,417,780
1906	84,271,358	54,343,155	6,495,350	167,843,588
1907	98,135,775	43,463,338	6,524,770	170,960,578
1908	106,041,873	43,458,583	5,704,375	175,170,144
1909	113,253,561	46,519,451	7,094,175	191,696,800

[1] The American and Canadian locks are open to the vessels of either country.

TABLE I23.—*Statement of bulk grain and grain products eastbound through canals at Sault Ste. Marie, Mich. and Ontario, 1910–1920.*

Year.	Wheat.	Other grain.	Total all grain.	Flour and grain products.
	Bushels.	*Bushels.*	*Bushels.*	*Tons.*
1910	86,259,974	39,245,485	125,505,459	757,678
1911	97,141,911	40,782,609	137,924,520	724,649
1912	174,086,456	69,024,446	243,110,902	865,215
1913	204,821,507	112,229,969	317,051,476	1,021,036
1914	150,284,095	68,338,072	218,622,167	971,442
1915	255,481,558	67,755,247	323,236,805	843,683
1916	226,063,315	93,180,316	319,243,631	1,022,646
1917	185,899,449	67,415,795	253,315,244	844,994
1918	122,718,146	30,800,621	153,518,767	822,884
1919	113,734,848	52,734,345	166,469,193	808,755
1920	143,456,487	51,630,135	195,086,622	747,753

Digitized by Google

TABLE 124.—*Shipments of wheat by lake and rail from Duluth and Superior, 1901-1909.*

Year.	Lake.		Rail.		Total.
	Quantity.	Per cent of total.	Quantity.	Per cent of total.	
Average:	*Bushels.*		*Bushels.*		*Bushels.*
1901–1905	28,560,661	94.8	1,572,245	5.2	30,132,
1906–1909	47,479,430	98.5	744,325	1.5	48,223,
1906	38,256,431	97.8	852,923	2.2	39,109,
1907	48,761,859	99.1	445,875	.9	49,207,
1908	48,961,298	98.6	703,966	1.4	49,665,
1909	53,938,131	98.2	974,538	1.8	54,912,

The use of the water route is shown by the preponderance of shipments of wheat from Duluth and Superior, via lake, as compared to rail, the figures in Table I24 showing that for the period from 1901–1905 about 5 per cent of the grain shipments from Duluth and Superior were sent via rail, while in later years less than 2 per cent were shipped in this way, the balance going via lake.

Prior to the passage of the Panama Canal act the rail carriers owned and operated boats on the Great Lakes. The ownership, together with the number of vessels operated, was as follows:

Name of boat line.	Railroad owner.	Number of boats.
Canada Atlantic Transit Co	Grand Trunk Ry	3
Erie Railroad Lake Line	Erie R. R	4
Lehigh Valley Transportation Co	Lehigh Valley R. R	6
Mutual Transit Co	New York Central R. R., Erie R. R., Lehigh Valley R. R., Delaware, Lackawanna & Western R. R.	12
Rutland Transit Co	Rutland R. R	6
Anchor Line	Pennsylvania R. R	12
Western Transit Co	New York Central R. R	10

These lines were the heaviest carriers of package freight, as distinguished from bulk freight, and they handled large quantities of canned goods, fruits, vegetables, salt, flour, sugar, coffee, and other commodities.

Referring to Table I25, it will be noted that the package-freight traffic on the Great Lakes, as distinguished from the bulk-cargo business, has shown a material decrease, and, in fact, in the year 1918 was not so great as in 1889.

Rates applying in connection with the steamer lines above referred to, other than the Canada Atlantic Transit Co., were certain differentials under the all-rail rates, while the rates in connection with the Canada Atlantic Transit Co. were certain differentials under the so-called standard lake lines, this adjustment having been made effective because of the longer route from depot harbor in connection with the Canada Atlantic line. The operation of the Panama Canal act forced the rail carriers of the United States to relinquish their control of their lake lines, without similarly applying to the Canadian owners of the Canada Atlantic Transit Co., and they are in the advantageous position of having a lake-and-rail differential line which enables them to go into American territory and take from

Digitized by Google

American carriers through Canadian territory goods destined to American ports for consumption by the American people.

It should be noted that the traffic on the Great Lakes has grown up with no expenditure by the Government beyond the improvement of some harbors and a comparatively insignificant expenditure to deepen the short connecting channels, and is, therefore, from the standpoint of the Nation, an economical and satisfactory transportation medium, in that it has not necessitated large expenditures for improvements of doubtful benefit.

Table I12, taken from the reports of the Chief of Engineers of the United States Army, shows the movement of all traffic by inland water routes for the calendar year 1916, as compared with 1920. It is to be noted that, with the exception of grain, sugar, tobacco, and lumber, the last item includes all agricultural products. and, in addition thereto, other miscellaneous commodities, and that of the whole the agricultural products represent a relatively small proportion, coal, iron ore, and steel, and sand, stone, and gravel furnishing the larger proportion of the business.

These figures indicate an increase in the total tonnage transported on inland waterways of 9.4 per cent in 1920 over 1916. The increase in the tonnage originated on Class 1 steam railroads was 9.2 per cent in 1920 over 1916. Exceptional business and transportation activity prevailed during 1920, and yet the traffic handled on many inland waterways either declined or increased but slightly. Traffic on the Mississippi River shows a heavy increase in coal and sand, stone and gravel, the increase in these heavy commodities being due in part to inability of the rail carriers to supply necessary open-top equipment, to the heavy demand for coal, and to extensive construction at Mississippi River points, requiring sand, stone, and gravel.

Inland waterways will be found most useful in the transportation of heavy commodities in bulk, and their value in this and other respects should not be underestimated. The development, however, should be based upon commercial value and utility, and with due regard for existing transportation systems.

THE GREAT LAKES–ST. LAWRENCE SHIP CHANNEL.

The Great Lakes penetrate the heart of the continent, and the area tributary to them has a population of over 40,000,000 people. In this area is raised 70 per cent of all the wheat, 66 per cent of all the corn, 80 per cent of all the oats, and 70 per cent of the barley produced in the United States. In manufactured products there are produced in this area 89 per cent of all the automobiles, 69 per cent of all the meat products, and 58 per cent of all the flour produced in the United States. Our average export of wheat and flour is more than 200,000,000 bushels of wheat a year, practically all from this area. If the transportation charge upon wheat to Liverpool could be reduced 10 cents per bushel, the American farmer would save many million dollars a year.

What is true of wheat is true to a lesser degree of other grains. The route now employed is either all rail to New York and other Atlantic and Gulf ports or part water and part rail via the Great Lakes and the Erie Canal to New York, and all water via Montreal. Employing the St. Lawrence route at present, however, involves

Digitized by Google

transfers at Buffalo and also at Montreal, which is very expensive. If ocean-going ships could be admitted into the Great Lakes, a very large saving would result, estimated by many experienced men to amount to 10 cents per bushel.

At present there is a barrier in the St. Lawrence River between Lake Ontario and Montreal preventing ocean-going vessels from entering the Lakes. This barrier consists of rapids at various points in the river, aggregating in length about 46 miles. The problem of the removal of this barrier has been the subject of investigation of the International Joint Commission, consisting of six members, three appointed by the United States and three by the Dominion of Canada. The investigation was made pursuant to action taken by Congress in January, 1920, and agreed to by Canada. Engineers of the United States and Canadian Governments were assigned to assist the commission in the preparation of engineering plans for the improvement of the river. The commission spent nearly two years investigating the subject. Hearings were held throughout the United States and Canada, and on January 16 last it filed with the Secretary of State its report, which has been transmitted to Congress.

The International Joint Commission in its report unanimously recommended the opening of the St. Lawrence River, and that the United States and Canada enter into a treaty for the improvement. The estimated cost of the completed improvement is $252,000,000, to be borne by the two countries, which sum includes the creation of incidental water power to the extent of 1,450,000 horsepower, one-half of which will belong to the United States.

In view of the conclusion of the International Joint Commission, this commission believes it advisable for the Government to enter into immediate negotiations with the Dominion of Canada for the conclusion of a treaty for the improvement of the Great Lakes-St. Lawrence ship channel.

In view of the conclusion of the International Joint Commission, this commission recommends that the Government enter into immediate negotiations with the Dominion of Canada for the conclusion of a treaty for the improvement of the St. Lawrence River, through a commission directed to make the further study suggested by the International Joint Commission, and authorized to proceed with the work if its plans, including a plan of financing shall be approved by Congress and the Dominion of Canada.

Digitized by Google

Chapter X.

FEDERAL AND STATE REGULATION OF TRANSPORTATION.

Transportation is a public function. Power to fix its rates so that they shall be fair to all concerned and to see that its service is sufficient and nondiscriminatory is as much a governmental prerogative and duty as the power of taxation. Not only does transportation precede and make possible the development of industry, trade, and commerce, but its rates and service also determine the location of industry, the radii of distribution, and the ability of one industry or one section of the country to compete with another in the same market. Governmental regulation of railroads may therefore be predicated, first, upon the public character and necessity of the service performed by railroads, and, second, upon the public's interest in and its right to reasonable and nondiscriminatory rates and efficient and equal service.

Prior to 1887, when the interstate commerce act became effective, regulation of railroads by public authorities was exercised under State law only. Regulation of rates, facilities, service, and the issuance of railroad securities received little, if any, Federal control or review. In contrast with this condition, our transportation is to-day governed by comprehensive and somewhat rigid Government regulations covering service, facilities, rates, public safety, and capital issues by both State and Federal legislation and administrative bodies.

The transportation act of 1920 definitely commits the country to the policy of private management and operation of railway systems. There is no clear line of demarcation between the field of regulation and the field of management, but it is well to keep the distinction between the functions of regulation and management clearly in mind in considering the problems involved in transportation.

Private management under governmental regulation must be predicated upon the limitation of governmental regulation to its appropriate field, and upon the general premise that private management necessarily contemplates the largest possible freedom of operation of economic laws consistent with the public interest; that is to say, under private management the economic considerations which apply to other businesses must be recognized as applying to railroads, and so far as these economic conditions can be permitted to govern without injury to the public interest they should be permitted to apply. Business and operating conditions on railroads, like business and operating conditions in other industries, are extremely sensitive to uncertainties, and at the same time are often vitally restricted to the public injury by too drastic or too rigid public requirements. The governmental policy, therefore, should be, as far as possible, definite and permanent, permitting at the same time sufficien flexibility of administration to allow regulation to anticipate and conform to

Digitized by Google

changed economic conditions. The basic legislation controlling transportation, rates, facilities, service, security issues, wages, and performances should therefore seek by definite policy to anticipate future operating conditions.

The transportation act of 1920 was passed February 28, 1920, and became immediately applicable. The conditions under which it has operated have been abnormal and have not furnished a completely satisfactory test, either of its soundness or adequacy under normal operating conditions, nor are we able yet to make a satisfactory comparison of the relative efficiency of private operation and Government operation. Indeed, it should be remembered in any attempt at such a comparison, based upon Government control of railroads through the war period, that the conditions of Government operation were also abnormal and consequently do not furnish a completely satisfactory test of the efficiency of complete Government operation. It is clear, however, that the efficiency of either Government or private operation is measured by the relative performance and cost of service, and that, measured by these standards, private management has shown itself to be superior to foreign Government operation.

DEVELOPMENT OF FEDERAL REGULATION.

The power of Congress to regulate transportation rests upon the third clause of section 8 of Article I of the Constitution, which provides that Congress shall have power "to regulate commerce with foreign nations and among the several States and with the Indian tribes." This provision was agreed to in the Constitutional Convention without a dissenting voice. It grew out of the difficulties arising from the failure of the States to agree upon a uniform regulation of commerce under the Articles of Federation.

Prior to 1887 there was a great lack of uniformity among the carriers, both as to practices, rates, and methods of dealing with the public. The practice of rebating was extensively indulged in. This gave rise to many local laws and regulations, such as the granger laws in the various Middle Western States.

The first Federal legislation dealing with the regulation of interstate transportation was passed in 1887. This legislation created the Interstate Commerce Commission and gave it power to prevent discriminations between persons, communities, and localities, but did not confer the rate-making power; that is to say, the commission was given the power to avoid a discriminatory rate, but not the power to establish a reasonable and nondiscriminatory rate in lieu thereof.

The evolution of the regulation of interstate commerce since 1887 and of the duties and powers of the Interstate Commerce Commission is briefly portrayed in the following statement, which indicates the important changes in the interstate commerce act from its passage in 1887 to and including the passage of the transportation act, February 28, 1920:

1887. Original act, approved February 4, 1887, applied to "any common carrier or carriers engaged in the transportation of passengers or property wholly by railroad, or partly by railroad and partly by water when both are used, under a common control, management, or arrangement, for a continuous carriage or shipment * * *."

Rebating made a crime, punishable as such. Personal discrimination of every sort forbidden.

Digitized by Google

1887. Local discrimination forbidden.
Long-and-short-haul clause included.
All pooling and traffic agreements prohibited.
Interstate Commerce Commission of five members established having "authority to inquire into the management of the business of all common carriers subject to the provisions of this act, and shall keep itself informed as to the manner and method in which the same is conducted * * *."
The original act did not confer rate-making power, but this omission does not seem to have been discovered until the Supreme Court decided the Social Circle case in 1896 (162 U. S. 184), almost 10 years after the act was passed.
The Supreme Court found no provision of the act "that expressly or by necessary implication conferred such powers." Subsequent decisions in other courts followed the Supreme Court's reasoning.

1903. *Elkins law.*—Approved February 19, 1903. Criminal provisions against rebating and failures to collect fixed charges *with penalties.* In the original act these practices were simply "prohibited and declared to be unlawful." The Elkins amendments dealt with provisions of law regarding observance of published tariffs, but had no effect on determination of what the tariffs should be. Abolished imprisonment as penalty but provided fines.
Expediting act of 1903. Under Elkins law this act "shall apply in any case prosecuted under the direction of the Attorney General in the name of the Interstate Commerce Commission."

1906. *Hepburn law.*—Approved June 29, 1906. Increased Interstate Commerce Commission to seven members. Broadened field of Federal regulation to cover express and sleeping car companies and pipe lines. Authorized commission to "determine and prescribe," upon complaint, just and reasonable *maximum* rates.
Reimposed penalty of imprisonment, as well as fine, for departure from published tariffs.
Commodities clause included:
Standardized carriers' reports to commission, and monthly and special reports as well as annual might be required under oath, with penalties of fine and imprisonment for delay and misstatement.
Carmack amendment.—Initial carrier to issue bill of lading and be liable for damage on connecting line.

1910. *Mann-Elkins law.*—Approved June 18, 1910. Jurisdiction of commission extended over "interstate telegraph, telephone, and cable companies, wire or wireless." Granted power to suspend changes in rates for examination as to their reasonableness, and placed burden of proof as to their reasonableness on the carriers.
Resuscitated long-and-short-haul clause—section 4—by eliminating the phrase "under substantially similar circumstances and conditions" and prohibiting increases in rates due to elimination of water competition.
Created Commerce Court.
Railroad required to quote rates on written request, being liable to penalty of $250 for misstatement from which loss to shipper should result.
Shipper given power to route shipments.
Commission given power to institute inquiries on own initiative.

1912. *Panama Canal act.*—Approved August 24, 1912. Commission given jurisdiction over property that may be or is transported from point to point within the United States by rail and water through the Panama Canal or otherwise.
Commission given power to order rail lines to make physical connections with water carriers.
Commission given power to establish through routes and maximum joint rates "between and over such rail and water lines * * *," also proportional rates to and from ports.
Railroads prohibited from operating vessels through the Panama Canal in competition with boat lines.

1913. *Valuation act.*—Approved March 1, 1913, provided for investigation, ascertainment, and report value of carriers' properties.
Commerce Court *abolished* by the district court jurisdiction act provisions from the urgent deficiency appropriations act of October 22, 1913.

Digitized by Google

1915. Cummins amendment as to liabilities, approved March 4, 1915.
1916. Cummins amendment as to liabilities and released rates, approved August 9, 1916.
Federal possession and control act.—Provisions from Army appropriation act, approved August 29, 1916. War-time operation.
1917. *Car service act.*—Approved May 29, 1917. Power to suspend and prescribe car-service rules.
Priority of shipment act.—Approved August 10, 1917. Preferential transport of certain selected shipments.
Organization amendment to section 24 of I. C. C. act, approved August 9, 1917. Increased number of commissioners, and authorized action by divisions.
Increased rates until January 1, 1920, to be approved by I. C. C. (15th section applications).
1918. *Federal control act.*—Approved March 21, 1918. Provisions for operation while under Federal control. Compensation based on average return three years ended June 30, 1917.
Revolving fund of $500,000,000 appropriated.
Section 10. President to initiate rates. I. C. C. to pass upon.
1920. *Transportation act.*
Terminating Federal control.
Settlement of disputes between carriers and employees.
Amending act to regulate commerce—changes to interstate commerce act.
Sec. 209. Guaranty to carriers after Federal control.
Sec. 210. New loans to railroads upon Interstate Commerce Commission certificate.
Amendment to act—Revision of text.
Sec. 1. Changes in territorial descriptions. Sec. 1, sub. c, eliminates water carriers which absorb terminal charges; limits jurisdiction over "rail-water" to "common control." Car service (P. 10–17) (Tank car case 242 U. S. 208). Executive action when emergency exists (P. 18–22). Certificates of convenience and necessity (I. C. C.). Extensions, abandonments.
Sec. 3. *Charges* must be paid before surrender of shipment after July 1, 1920, Ex Parte 73, Op. 6204, 57 I. C. C. 591. (3) Eliminates provision about not requiring carrier to give use of terminals to another road. (4) Joint use of terminals.
Sec. 4. Lower charge must be compensatory. Circuitous route provision. No relief for potential water competition.
Sec. 5. Interstate Commerce Commission may permit pooling of freight and division of earnings. Acquisition of control. Consolidation of lines.
Sec. 13. (3) Conference and cooperation with the State commissions respecting relationship of inter and intra state rates. (4) Interstate Commerce Commission prescribe maximum rate, charge, classification, regulation, minimum, or both, and remove undue preference "between inter and intra state traffic."
Sec. 15. Power to prescribe maximum, minimum, or both, for traffic subject to act. Street electric passenger railways excepted. Establishment of temporary through routes. (5) No loading and unloading charges for live stock at public yards. (7) Suspension limited to 120 days plus 30 days. (10) Interstate Commerce Commission may direct routing when unrouted by shipper.
Sec. 15a. Carriers, under rate-making provisions of this section, shall not include (*a*) sleeping-car companies, express companies; (*b*) street or suburban electrics; (*c*) interurban electric; (*d*) belt line owned by a State. (2) Interstate Commerce Commission shall initiate rates so that carriers as a whole will earn fair return. (3) Interstate Commerce Commission shall determine percentage of fair return 5½ per cent two years beginning March 1, 1920, plus one-half per cent for betterments and improvements. (4) Determination of value by Interstate Commerce Commission. (5) Income in excess of fair return held as trustee for United States. (6) Disposition thereof in excess of 6 per cent. one-half to reserve fund, one-half to railroad contingent fund. (7) Carrier may draw from reserve fund for dividends, etc. (10) Uses of contingent-fund loans to carriers. (15) Interstate Commerce Commission may acquire and dispose of equipment.

Digitized by Google

1920. Sec. 20a. Regulation by Interstate Commerce Commission of issuance of securities.
Sec. 24. Commission enlarged to 11 members.
Sec. 25. United States registry steam vessels to file schedules with Interstate Commerce Commission of (1) ports, (2) dates of arrival, (3) routes. (2) Rail and water carriers must quote rates on shipper's request; reservations of space by water carrier for railroad. (3) Interstate Commerce Commission prescribe regulations for publishing water schedule. (4) Issuance of through bill of lading when space reserved. (5) Not "continuous carriage."
Sec. 26. Interstate Commerce Commission may require installation of safety devices.

ORGANIZATION OF THE INTERSTATE COMMERCE COMMISSION.

The present plan of organization of the Interstate Commerce Commission is set out in the thirty-fourth annual report of the commission, submitted to Congress December 1, 1920. It is unnecessary to review this report in detail, and we therefore only briefly outline the changes in that organization which have been made from time to time.

In accordance with the act of 1917 the Interstate Commerce Commission on October 17, 1917, divided its membership—in that act enlarged from seven to nine members—into three divisions and provided for the monthly rotation of these divisions in hearing arguments in cases other than those reserved for submission to the entire commission. Certain branches of administrative work were also confided to these divisions. The transportation act of 1920 imposed many additional duties upon the commission and gave it many additional powers, as well as broadening the powers already conferred. At the same time the personnel of the commission was enlarged from 9 to 11 members. Promptly upon the passage of this act the commission divided its membership into five divisions, Nos. 1, 2, 3, 4, and 5. Each division consists of three members except division 4, which is composed of four members.

Division 1 conducts the work of the bureau of valuation, enforces the safety appliance act, the accident report act, the hours of service act, the ash pan act, the boiler inspection act, the block signal resolution, and administers section 26 of the interstate commerce act which provides for the installation of automatic train stops and train control or other safety devices.

Division 2 considers applications and requests for the suspension of rates under paragraph 7, section 15, of the interstate commerce act, and matters arising under sections 4, 6, 20, and 208a of that act, and the disposition of cases on special dockets involving reparation.

Division 3 considers formal cases not orally argued and not allotted to individual commissioners or referred to the commission, and matters pertaining to the bureau of inquiry.

Division 4 is the financial division of the commission, and has to do with matters arising under sections 204, 209, and 210 of the transportation act, and also matters arising under paragraphs 18 to 20, inclusive, of section 1; paragraph 6, parts (a), (b), and (c) of section 5; and section 20 of that act. These relate to the reimbursement of carriers' deficits incurred during the period of Federal control and guaranteed to carriers during six months beginning March 1, 1920, loans to railroads, the issuance of certificates of convenience and

Digitized by Google

necessity for new construction or abandonment of railroads, and matters concerning the regulation and issuance of securities of common carriers.

Division 5 deals with matters arising in paragraphs 10 to 17, inclusive, and 21 to 24 of section 1 of the transportation act, relating to car service and extension of lines and priority of transportation. It also considers matters under paragraph 4 of section 3, respecting the common use of terminals by carriers; under paragraph 13 (a) of section 6, concerning physical connection between rail lines and docks; and under paragraph 10 of section 13, concerning the routing as between carriers of traffic which is unrouted by the shipper.

Various bureaus have been established to correlate the duties and powers with which this tribunal is charged. They are the bureau of finance, of accounts, of statistics, of informal cases, of traffic, of law, of inquiry, of service, of safety, of locomotive inspection, and of valuation.

The matters which come before the commission are widely varied and important. On March 1, 1922, the commission had before it on formal docket more than 1,800 cases. These cases involved rates, service, facilities, the issuance of securities, and many other matters arising in nearly every part of the country. It was formerly the practice for the commissioners to hear cases in various parts of the country outside of Washington, but with the increased scope of powers and duties of the commission this practice has been largely discontinued, and hearings are ordinarily held outside of Washington by special examiners, appointed for this purpose, who take testimony and make tentative reports, subject to exceptions by interested parties. If exceptions are taken, cases are set down for hearing at Washington. This has resulted in a high degree of concentration of the work of the commission at its offices in Washington.

While a large part of the powers of the commission must be centralized in Washington, the practice of hearing cases in Washington involves great expenditure of time and money on the part of shippers and other interested parties who deem it necessary to come to Washington to present their cases if the proper adjudication is to be had. This practice in general is to the advantage of more highly organized industries maintaining adequate traffic departments and able to pay for the preparation and presentation of cases in Washington, and militates against the adequate consideration of matters of less consequence from the standpoint of national concern but of equal importance to the interested parties.

This commission believes that the Interstate Commerce Commission should be decentralized. The need of such decentralization, especially in the matter of control of transportation rates, has become more and more apparent as the scope of the commission's authority has been widened, and the relation between intrastate and interstate rates more and more a matter of controversy.

This commission believes that the establishment of regional offices of the Interstate Commerce Commission would contribute not only to the convenience of shippers and other interested parties, but to a better coordination of interstate and intrastate rates, as well as to a more thorough understanding of the relationship between rates and local economic conditions.

Digitized by Google

The appropriations for the Interstate Commerce Commission have not been adequate for the full performance of the duties imposed upon it by law, and, of course, on the present basis would not be adequate for such decentralization as is contemplated in the plan recommended. The expenditure of $4,900,000 annually for all of the activities of the commission, including the regulation of 260,000 miles of steam railroads, water traffic, electric lines, wire, pipe lines, express companies, physical valuation, licomotive inspection and bureau of safety appliances, can scarcely be said to be sufficiently adequate to permit of the most thorough and efficient regulation. The activities of the Interstate Commerce Commission touch the business and economic development of the country intimately. Its decisions vitally affect the prosperity and the maintenance of agriculture, industry, and transportation. It should be given every facility necessary to its functions through adequate Federal appropriation. It may be pointed out that undue curtailment of the necessary expenses of the Interstate Commerce Commission may cost the public many times the sum saved. In this period of critical relationships between agriculture, industry, and transportation, adequate appropriations for the work of the commission are peculiarly necessary.

The character of employment under the Interstate Commerce Commission does not lend itself to the usual governmental classifications, and it is desirable that the commission be permitted to make its own classifications of its employees. If, however, employees of the Interstate Commerce Commission are included with the classification of Government employees, due regard should be had for the peculiar character of the organization of the commission and of the classifications and duties of its employees. The work of the commission requires the employment of experts whose service must be obtained in competition with industry and the railroads, and can not be obtained within the limits of ordinary Government salaries. A fixed level of salaries which is too low in comparison with the salaries paid by industries or railroads results in an excessive turnover and prohibits the continuous employment in the service of the commission which is necessary for its greatest efficiency.

Rail transportation is now operating under extensive and exacting regulation. The measure of good regulation is the minimum of laws necessary for the protection of the public, since the excessive interference of Government agencies in the administration of our transportation systems under private ownership and competitive operation results in restriction and curtailment of individual initiative and efficient management.

The commission is impressed with the importance of a continuous and comprehensive study of all the transportation facilities of the country as they are related one to the other. This study should include the inland waterways, the coastwise service, highway transportation, transportation by airplane, and the bearing which the development of these kinds of transportation may have upon agriculture, industry, trade, and commerce.

There is now no adequate machinery for the collection or dissemination of information relating to the economic relationship of transportation to agriculture, industry, trade, and commerce. The commission believes that such an agency should be created in the Inter-

Digitized by Google

state Commerce Commission to secure and correlate statistical and other information with reference to the related activities—transportation, trade, industry, and commerce. Of course, such an agency, however or wherever established, should be in position to secure from the various departments, bureaus, and agencies of the Government, and from private sources, statistical and other information necessary for the complete, comprehensive treatment of the subjects involved.

There is a lack of coordination and uniformity between the statistical methods used and the statistics secured by the different departments, bureaus, and agencies of the Government. There are also frequent changes of classification, which destroy the comparability of these statistics regarding the same commodity or service over a period of years and as between different commodities or services. The statistics are neither sufficiently accurate nor current. These changes in classification should be minimized and the statistical methods and statistics procured by different departments, bureaus, and agencies of the Government should be put upon a comparable basis in order to make possible their fullest use.

TRANSPORTATION ACT OF 1920.

The transportation act of 1920 was preceded by a long period of congressional investigation, and was the subject of very careful, comprehensive consideration by Congress. Its provisions are much more extensive and impose upon the Interstate Commerce Commission much greater duties than is generally appreciated. Many of these powers so far have not been exercised, due in part to the fact that the Interstate Commerce Commission has been occupied with the consideration of rate and other questions which could not be postponed and partly to the fact that the appropriations provided have not been sufficient to provide for the new divisions necessary to the exercise of the powers conferred.

It is neither necessary nor desirable, from the standpoint of the commission, to outline in detail the provisions of the transportation act, but it seems proper to point out some of the powers granted to the Interstate Commerce Commission by that act which have not been fully exercised or may not have been exercised at all, in order that the public may understand to what extent failures of regulation or of operation may be due to lack of legislative authority or due to lack of power of the administrative body.

The act among other things empowers the Interstate Commerce Commission to establish through routes and to provide for equitable divisions between the carriers participating in the revenues arising from through shipments. Divisions of compensation arising from through traffic between carriers have heretofore been the subject of voluntary agreements between them. The failure of carriers to agree upon these divisions is a frequent cause for delay in the effective application of reductions of through rates. The commission is informed that division sheets effective 1900 to 1905 have in some instances not been reviewed, notwithstanding frequent changes in rates and rate levels, owing to the inability of carriers to agree upon divisions. The commission is further advised that there are a large number of through rates upon which no divisions have been agreed to.

Digitized by Google

The exercise of the power to establish equitable divisions of revenue from through shipments would involve the erection of a very large organization and the expenditure of a large amount of money. It is desirable on this account, as well as on account of the general administrative difficulties arising from the exercise of a power of this character, that carriers should agree promptly upon these divisions, thus making it unnecessary for the Interstate Commerce Commission to exercise the powers conferred. But the commission believes that in the event of the failure of the carriers to do so promptly the Interstate Commerce Commission should adopt the necessary rules and regulations to make such divisions or to require them to be made promptly.

The present system of calculating divisions of through rates and the accounting for the revenues arising from through shipments is extremely complicated and occasions unnecessary expense, as well as unnecessary delay in the application of such rates. There should be substituted for this complicated method of calculating the divisions of through rates a system of calculating them in simple two-figure percentages. There should also be established divisional clearing houses through which the debits and credits of the respective carriers resulting from these divisions could be promptly determined and paid.

In addition to the power to prescribe the divisions of the through rates to the respective carriers participating therein the Interstate Commerce Commission is also authorized, with the assent of the carriers, to permit the pooling of freight or the division of earnings without reference to the respective contributions of each carrier in service to the transportation of a given commodity from a given point of origin to a given destination.

The Interstate Commerce Commission is authorized to establish reasonable rules, regulations, and practices with respect to car service, which include use, control, supply, movement, distribution, exchange, and interchange of locomotives, cars, and other vehicles used in transportation, including special type equipment. This section evidently contemplates the establishment of general rules respecting the supply of cars to prevent discrimination as between shippers, classes of shippers, or carriers, subject to the general right of each carrier arising from its ownership of equipment. The Interstate Commerce Commission also has power during an emergency to suspend car service rules which it or the carriers have made, and to make just and reasonable directions with respect to car service without regard to ownership, and for the purpose of carrying out these directions may establish agents or agencies. Normally, therefore, the power of the Interstate Commerce Commission with respect to car service is limited to making rules and regulations of general applicability, to be carried out by the carriers under the ordinary penalties for violation of regulations. In times of emergency the powers of the Interstate Commerce Commission extend to the actual direction of the movement, without regard to ownership, through agents or agencies set up by it.

Car shortages and the emergencies created by them result from excess movement in one direction without equivalent return in the other, from excessive tonnage offered in periods of seasonal movements, from congestion in terminals, particularly at ports, and from

Digitized by Google

a variety of other causes. These shortages should be prevented by a current balancing movement, which is not accomplished in the highest possible degree by existing methods. The commission believes that car shortages and the emergencies resulting from them might be prevented by the establishment of a central control of car supply, with divisional branches constantly in touch with the movement of traffic, clothed with power to require current equalization of car supply and demand.

The Interstate Commerce Commission is empowered under the act to require a carrier to permit the use of its terminal facilities by another carrier, and in case of an emergency to make such requirement without notice, hearing, or other formality. The most efficient use of terminals involves questions of greater difficulty and importance than the mere use of the terminal or terminal tracks of one carrier by another. The commission is convinced that great economies can be made by the joint use of terminals, by the electrification of terminals in some instances, and by the better coordination of traffic and operation within such terminals. The power given the Interstate Commerce Commission by the act apparently does not go to the extent of authorizing the commission to coordinate the operation and traffic within such terminals, or to require electrification of terminals, or completely control the use of terminal facilities. This is largely in practice a matter of agreement and cooperation of the carriers, and should, so far as possible, continue so. The commission believes that the carriers should consider and provide for the increased economy and efficiency in operation of terminals through closer coordination of terminal facilities and the operation and traffic therein, as well as for the unification and joint use of existing terminal facilities and the electrification of such facilities where the local conditions existing and the finances of the carriers will permit.

RULE OF RATE MAKING.

Probably no section of the transportation act has been more misunderstood in terms and in application than section 15–A. Subdivision 2 of section 15–A provides:

> In the exercise of its power to prescribe just and reasonable rates the commission shall initiate, modify, establish, or adjust such rates so that carriers as a whole—or as a whole in each of such rate groups or territories as the commission may from time to time designate—will under honest, efficient, and economical management and reasonable expenditures for maintenance of way, structures, and equipment earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation: *Provided*, That the commission shall have reasonable latitude to modify or adjust any particular rate which it may find to be unjust or unreasonable and to prescribe different rates for different sections of the country.

Subdivision 3 of section 15–A provides:

> The commission shall from time to time determine and make public what percentage of such aggregate property value constitutes a fair return thereon, and such percentage shall be uniform for all rate groups or territories which may be designated by the commission. In making such determination it shall give due consideration, among other things, to the transportation needs of the country and the necessity—under honest, efficient, and economical management of existing transportation facilities—of enlarging such facilities in order to

Digitized by Google

provide the people of the United States with adequate transportation: *Provided*, That during the two years beginning March 1, 1920, the commission shall take as such fair return a sum equal to 5½ per centum of such aggregate value, but may, in its discretion, add thereto a sum not exceeding one-half of 1 per centum of such aggregate value to make provision in whole or in part for improvements, betterments, or equipment which, according to the accounting system prescribed by the commission, are chargeable to capital account.

The provision fixing the fair rate to the railroads at 5½ or 6 cent expired by the terms of the act March 1, 1922. There is no suggestion that this provision should be revived or extended.

The purpose of this provision was to stabilize railroad credit and permit a level of rates which would produce revenues equal to operating expenses and a fair return upon the aggregate value of railway property put to public use. Notwithstanding this provision, the economic conditions existing in 1920 and 1921 were such that the net returns to the railroads, on the tentative value fixed by the Interstate Commerce Commission of $18,900,000,000, at no time during this period exceeded 3¼ per cent.

The three years preceding June 30, 1917, were years of high revenue returns to the railroads, as they were to industries generally. The railroads were taken over by the Federal Government on January 1, 1918. Federal control continued until February 29, 1920. During this period the railroads operated under constantly diminishing returns with an ever-mounting transportation cost and with only slight increase in the unit of compensation for their services. Notwithstanding that during this period railroad rates were increased as of June 25, 1918, approximately 22 per cent, the constantly increasing expenses overtook the revenues, and the deficiencies that resulted were paid to the railroad corporations out of the Federal Treasury. The expenses of operation during this period for labor and material were markedly increased without adequate increases in rates. This had the effect of distorting the relationship which had hitherto existed between the expenses of operation and the revenues therefrom. Railroad properties were returned to their owners with this distorted relation between revenues and expenses. The railroads were turned back to their owners at the height of the period of postwar inflation and intense business activity, when a high level of prices minimized the effect of a higher level of freight rates.

Beginning with June, 1920, there began a period of price declines unparalleled in the history of this country or perhaps in any other. This decline was well under way in August, 1920, when the Interstate Commerce Commission by Ex parte 74 increased freight rates in the eastern group on an average of 40 per cent; in the western group, 35 per cent; in the southern group, 25 per cent; and in the Mountain Pacific group, 25 per cent. The coincidence of these advances with the declining market prices of commodities produced a condition under which cost of transportation became a heavy burden upon the industry of the country. Agricultural prices declined more rapidly and in greater degree than the prices of other commodities, with resultant greater disproportion between prices of such commodities and the price of transportation. The business depression which accompanied this decline in prices gradually reduced the volume of business of the railroads.

Digitized by Google

The volume of this business was probably further reduced, but to a much more limited extent, by the high level of rates which either discouraged or in some instances wholly prevented the movement of traffic. This was especially true of agricultural commodities, such as hay, which are of heavy tonnage and of low value, and also shipments of perishables, most of which are hauled long distances at relatively high freight rates. Nevertheless, the conditions surrounding the operation and revenues of the railroads during this period furnish a basis for the adoption of a rate policy in the future. It seems clear that the general level of freight rates should bear a relation to general price levels and to the economic conditions existing in the country and the ability of market prices of commodities to support the rates fixed.

If it is assumed that the railroads are entitled to earn a fixed return upon the value of property put to public use, at all times and under all conditions, it is clear that rates must rise in periods of falling prices and business depression, when the volume of traffic is small. If, on the other hand, it is assumed that the same rate of return shall be applicable in periods of business prosperity, when business is best able to bear a higher level of rates, railroads will be unable to earn reserves which would enable them to participate in the general deflation of prices in periods of business depression through reduction in rates.

The several horizontal advances in rates during recent years have in large measure distorted the relationship established by a long period of adjustment resulting from the experience of many years, and the effect of the application of rates upon movement, volume, and maintenance of competitive conditions. There has never been a satisfactory basis of rate adjustment or relationship between different commodities, because there was nowhere a sufficiently comprehensive basis of economic fact from which the relationships of commodity rates to each other could be determined. The commission has endeavored in the economic studies presented in this report to establish, as far as the limited time which it could devote to the investigation would permit, the basic price relations between commodities and between the prices of commodities and freight rates. This basis should be amplified and should be kept up currently by the Interstate Commerce Commission or by some other agency with which it is coordinated in such a way as to make the information promptly and comprehensively available.

THE RECAPTURE PROVISION.

Railroad service is performed under a great variety of conditions, and the return to a given railroad will depend in large measure on the location of the road, density of population, volume of traffic, efficiency of management, and other factors. These factors differ upon different railroads. The rates which will return 6 per cent, or any other given return, upon one railroad may produce a higher or lower return upon another railroad in the same general territory. No system has been or can be devised which will produce an identical return upon all railroads.

The transportation act of 1920 looks to the establishment of conditions of substantial equality of return to all roads through con-

Digitized by Google

solidation of weaker with the stronger lines and provides that the carriers may apply to the commission for permission to consolidate. In order that this consolidation may proceed in accordance with the general plan for the transportation system of the entire country the act further provides that the commission shall formulate a tentative plan for the consolidation of all systems of the country. The commission has no power to compel such consolidations. It was recognized that under the conditions prevailing at the time the railroads were turned back to private management some assistance must be given to weaker roads pending their consolidation with stronger lines. In order to accomplish this purpose as well as to equalize the returns to the railroads pending the consolidations contemplated by the act the act provides that one-half of the return of any railroad in excess of a reasonable return—which prior to February 28, 1922, was fixed by the act at 5½ or 6 per cent, and which subsequent to that time is to be fixed by the commission—should be paid into a general railway contingent fund. This fund may be used to make loans to railroads or to provide necessary equipment and facilities for their operation. No part of the earnings of any railroad has so far been recovered by the commission.

Necessarily the consolidation of railroad systems of the country must proceed gradually and will occupy a considerable period of time. The commission believes that sufficient time should be given to permit of a fair test of the possibility of working out voluntarily the consolidations contemplated by the act and to afford a reasonable basis of experience under the provisions with respect to recapture of earnings before an attempt is made to modify its provisions or to provide a compulsory method of consolidation.

FOURTH SECTION OF THE ACT TO REGULATE COMMERCE.

LONG AND SHORT HAUL CLAUSE.

Prior to the amendment of June 18, 1910, the interstate commerce act prohibited a carrier from charging or receiving greater compensation in the aggregate for the transportation of passengers or a like kind of property under substantially similar circumstances and conditions for a shorter than for a longer distance over the same line or route in the same direction, the shorter being included within the longer distance, or to charge any greater compensation as a through rate than the aggregate of the intermediate rates, but permitted the Interstate Commerce Commission to allow relief for violations of the prohibitions of the section in special cases after investigation and to permit the charging or receiving of greater compensation for shorter hauls than for longer hauls in the same direction.

The provisions of section 4 were practically inoperative, because the railroads were able to show in the large majority of cases that the conditions were sufficiently dissimilar to take the particular violation of the prohibition out of the provisions of the act. The amendment of June 18, 1910, struck out of the prohibition the words "under substantially similar circumstances and conditions" and permitted violations of its prohibition in the discretion of the Interstate Commerce Commission in special cases after investigation. The transportation act of 1920 limited the discretion of the commission in

Digitized by Google

granting relief from the prohibitions of the fourth section by providing that in exercising the authority conferred upon it under the fourth section "the commission shall not permit the establishment of any charge to or from the more distant point that is not reasonably compensatory for the service performed; and if a circuitous rail line or route is, because of such circuity, granted authority to meet the charges of a more direct line or route to or from competitive points and to maintain higher charges to or from intermediate points on its line, the authority shall not include intermediate points as to which the haul of the petitioning line or route is not longer than that of the direct line or route between the competitive points; and no such authorization shall be granted on account of merely potential water competition not actually in existence."

In general, the idea of grading charges for transportation upon a mileage basis proportionate to the distance between points makes very prompt and strong appeal to the sense of justice. Conversely, the idea of permitting a greater charge for a short haul than for a long haul in the same direction immediately strikes the sense of justice as an unjust discrimination. In a country where there is as wide a variation of local conditions of competition, both as between industries and as between different means of transportation, as in this, the application of a rigid prohibition against charging higher rates for short hauls than for long hauls under any circumstances would result in greater discrimination and more rigid restriction upon competition as between industries and means of transportation than would result from the exceptions which might be permitted under a more flexible provision.

There are five classes of cases in which relief from the prohibitions of the fourth section arise. These are the exceptions arising from, first, water competition; second, market competition; third, circuitous route competition; fourth, competition between ports; and, fifth, competition between weak and strong lines.

WATER COMPETITION.

Prior to our entrance into the World War permits were granted to the carriers by the Interstate Commerce Commission in accordance with the provisions of the fourth section to maintain from eastern points to Pacific coast terminals (of which San Diego, San Pedro, Los Angeles, San Francisco, Oakland, Portland, Tacoma, and Seattle are typical) rates lower than those currently applied to intermediate points to meet the competition of water carriers operating first via Cape Horn, and thereafter via Cape Horn or via the Panama Railroad or via the Tehuantepec Railroad, and, beginning in 1914, via the Panama Canal.

Steamship service via the water routes from Atlantic ports to Pacific ports, having been largely abandoned during the war, the Interstate Commerce Commission, at the request of the United States Railroad Administration, discontinued the practice of applying lower rates to Pacific coast terminals, and in 1918 increased the rates to Pacific coast terminals, observing as the minimum the then current rates to the more distant intermediate jobbing centers, such as Phoenix, Ariz., Reno, Nev., and Spokane, Wash.

Digitized by Google

The current rates from eastern points to the intermediate points, of which Phoenix, Reno, and Spokane are typical, have recently been declared by the Interstate Commerce Commission in proceedings brought by the Intermediate Rate Association to be just and reasonable. Since that time the steam lines have made application to the commission for authority to apply lower rates to the more distant Pacific coast terminal points. If the rail lines are not allowed to meet the water transportation rates on a reasonable, competitive basis on coast-to-coast traffic, the tonnage will tend to go to the water carriers, thereby depriving the rail carriers of tonnage necessary to support the long haul from the general territory on the Atlantic to the general territory on the Pacific, and vice versa. This loss of tonnage and of revenue incident to it necessarily involves the raising of rates upon the remaining tonnage in order to make up the loss. Consequently, higher rates to interior points would result, regardless of whether lower rates were permitted to coast points or not. The interior distributor therefore is not injured by the application of lower rates to coast points than to intermediate points, as his produce must come by rail in any event, while the coast point will under all circumstances have the advantage of the lower water rate.

MARKET COMPETITION.

The second class of cases under which applications for relief from the fourth section arise are those to meet market competition. Such cases arise, for example, where rail rates may have been granted between Atlantic and Pacific coast points, which are lower than rates to intermediate intermountain points, and likewise may be lower than the rates from interior points, such as Chicago, St. Paul, Kansas City, Omaha, and Duluth, for example, to Pacific coast points. Formerly, when such lower rail rates were granted on shipments from Atlantic seaboard to the Pacific coast points, the interior points (Chicago, St. Paul, Kansas City, etc.) were placed upon an equality as to freight cost with the Atlantic port manufacturer and producer so far as rail rates to Pacific coast points were concerned. Under this arrangement the Atlantic seaboard manufacturer still maintains the advantage of lower rates via water routes, but the equal rates granted to interior manufacturers and producers place them upon an equality as to rail freight cost. These lower rates granted at interior points to Pacific coast terminals are in violation of the fourth section, and unless relief is granted from such violation, thus permitting these lower rates to be applicable, the interior points in the Middle West are at great disadvantage in competition with the Atlantic seaboard producer at Pacific coast points, as well as at intermediate intermountain points. The difference between the rail rate between Atlantic and Pacific coast points and the water rate measures the distance that the Pacific seaboard distributor can distribute goods received by water inland. This advantage can not be taken away from him except by regulating water rates upward, which would deprive the seaboard distributor of the natural advantage he has by virtue of his location and which he is entitled to. This advantage continues, regardless of the rail rate which may be charged from Atlantic to Pacific coast points, and the intermediate mountain territory jobber or distributor is therefore in no way dis-

Digitized by Google

advantaged by the lower rail rate to Pacific coast ports, because he would in any event have to meet the competition of the lower water rate. On the other hand, the interior distributor is in no way benefited by the maintenance of higher rates to Pacific coast terminals because the competition made possible by the lower water rate still remains.

CIRCUITOUS ROUTE COMPETITION.

The third class of cases requiring relief from the prohibitions of the fourth section are those involving circuitous route competition, and this is by far the most numerous class. There are numerous cases in the United States where two or more railroads compete for traffic between two points. The distance by one route may be, and frequently is, very much shorter or longer than the distance by another. If the rate is based on the mileage of the short line, it will be too low to compensate the longer route carrier for its longer haul. If it is based on the longest route, it will be greater than necessary to compensate the short-line road for the shorter haul. If the rates are made in proportion to the respective mileage of the different roads between the two points, the shortest line will obtain all of the traffic, and in that event the rates at intermediate points on the longer lines would have to be raised sufficiently to bear the entire burden of the cost of maintaining them. It has, therefore, been the practice to permit the longer routes to make a rate which will compete with traffic between the two points with the short route, and to make up loss incident to their higher operating costs on the longer mileage by charging higher rates to intermediate points at greater distance from the point of destination or origin, as the case may be, than is charged between the two competitive points. As previously indicated, while this does violence to the general principle that rates should be based upon the cost of the service rendered, the actual cost to intermediate points would be greater if the more circuitous route were not permitted by lower rates to competitive points to obtain tonnage, the revenue of which would make up a part of the cost of the service on the entire line.

PORT COMPETITION.

The fourth class of cases requiring relief from the fourth section arise from the necessity of equalizing rates between ports or groups of ports. For example, the rates from manufacturing centers in the Northwest and Mississippi Valley for export or import to and from Atlantic seaboard points are probably the lowest in the country, and they increase in proportion to the distance from the seaboard. These low rates are justified by the lower cost of operation of the eastern lines. The rates on lines running from northwest Mississippi Valley points to Gulf and South Atlantic seaports are relatively higher than the rates from such points to North Atlantic seaboard points, because of the higher cost of operation of the rail lines running from the northwest Mississippi Valley points to Gulf and South Atlantic seaboard points. The equalization of these rates involves a violation of the general principle prohibiting greater charges for short haul than for long haul, and relief must be had from this prohibition if South Atlantic and Gulf ports are placed on a competitive basis with North Atlantic seaports in competing for export and import trade

Digitized by Google

originating or destined for the Northwest or Mississippi Valley points.

STRONG LINE COMPETITION.

The fifth class of cases requiring relief from the prohibitions of the fourth section arises from those cases where weaker lines are unable to secure tonnage and revenue necessary to pay their cost of operation in competition with stronger lines without relief from the provisions of the fourth section. These weaker lines are frequently obliged, in order to obtain the volume of traffic necessary to pay operating costs, to make competing rates with stronger lines and at the same time to charge higher rates for shorter hauls in view of their poor location and the relatively small volume of traffic they are able to obtain in competition with the stronger lines.

DISPUTES BETWEEN CARRIERS AND THEIR EMPLOYEES.

The price of transportation is necessarily governed by the cost of transportation. There is, therefore, a very definite relation between the price which the public pays for transportation and the cost which the railroad pays for labor, material, and equipment.

Certain elements which enter into this cost are now subject to regulation by the Interstate Commerce Commission or by other public bodies. The Interstate Commerce Commission now controls the issuance of railroad securities, and, to some extent, the capital charges arising from them. It controls expenditures for new lines and extensions. In general, however, expenditures for material and equipment are within the province of management, subject to the same economic rules which apply in other industries. Wages paid by railroads are subject to initiation, determination, and control by the Labor Board, established under sections 300 to 316 of the transportation act. Wages constituted 62.3 per cent of railway operating expenses in 1916, and 63.4 per cent in 1920, and are therefore the largest single factor in the cost of transportation.

We thus have, therefore, the anomalous condition of one governmental body controlling the price of transportation and another governmental body controlling the major element of cost of transportation.

The Labor Board was organized April 16, 1920. It consists of nine members. Three constitute the labor group, which represents employees and subordinate officials of the carriers, three constitute the management group and represent the carriers, and three constitute the public group and represent the public. The first two groups are nominated by the employees and carriers, respectively, but all members are appointed by the President, by and with the advice and consent of the Senate.

The law also provides for the establishment of so-called adjustment boards in which the carriers and employees are equally represented. It also makes it the duty of all carriers, their employees, and agents "to exercise every reasonable effort and adopt every available means to avoid any interruption to the operation of any carrier growing out of any dispute between the carrier and the employees or subordinate officials thereof." Adjustment boards have not been created by the carriers and the employees in all cases, and where created

Digitized by Google

they have not always functioned in the final settlement of disputes between carriers and their employees.

Subdivision (d) of section 307 of the transportation act provides that "in determining the justness and reasonableness of such wages and salaries or working conditions the board shall, so far as applicable, take into consideration, among other relevant circumstances—

(1) The scale of wages paid for similar kind of work in other industries.

(2) The relation between wages and the cost of living.

(3) The hazards of the employment.

(4) The training and skill required.

(5) The degree of responsibility.

(6) The character and regularity of the employment.

(7) Inequalities of increases in wages or of treatment; the result of previous wage orders or adjustments.

The specific factors above mentioned, as well as those included "among other relevant circumstances" vary widely as between railroads, between different divisions of the same railroad, between localities, classes of employment, and individuals within such classes.

In practice, the board not only determines disputes which have arisen and have not been settled by adjustment boards but initiates and promulgates schedules of wages and rules for working conditions. Obviously such schedules and rules when promulgated by a public body should be uniform and when applying generally universal in application. The use of such uniform and universally applicable wages and rules for working conditions ignores the variations in the factors above enumerated as between different railroads, divisions of the same railroad, localities, classes of labor, and individuals within such classes. The application of a general level of wages or rules for working conditions of uniform and universal relevancy nullifies in practice the factors above enumerated which would otherwise be applied with reference to the circumstances and conditions arising upon each railroad in each locality, each class of employment, and each individual case.

As previously indicated, the adjustment boards have not functioned to settle disputes finally because both employees and employers, having the right to resort to an appellate tribunal, almost invariably exercise the right on the chance that an appeal will result in a reversal and a determination of the adjustment board in their favor. In many cases the Labor Board has taken jurisdiction of disputes which have not previously been the subject of determination by adjustment boards. The disposition of both employers and employees to resort to the Labor Board in all cases of dispute and the willingness of the board to consider such disputes has resulted in bringing before it a large number of disputes with respect to wages and working conditions applicable to individuals or small groups of individuals which, by their number, tend to overburden the board and keep it from promptly considering and settling questions of larger aspect.

We think it was the intention of Congress to provide for the settlement of disputes between the carriers and their employees and subordinate officials by the usual methods of bargaining or conciliation between the representatives of the carriers and employees, and that resort should be had to the Labor Board for the settlement of such disputes only in cases actually threatening interruption of commerce.

Digitized by Google

In the settlement of ordinary disagreements as to wages or working conditions the carriers and their employees stand upon an equal footing, and their disagreements should be settled by the ordinary process of adjustment applying in other industries. It is only where such disputes threaten to interrupt commerce that the paramount public interest justifies the interference of a governmental body. There is also a distinction between the general wage levels on railroads and those of other industries, and there are further distinctions between wage scales for classes of railroad labor and those applying to the same or comparable labor in other industries. These distinctions can not well be preserved by rigid public regulation. Control over the detailed process of operation is essentially the province of management, while control over transportation rates is essentially governmental.

The function of government is not to enter the field of transportation wherever it can, but only wherever it is needed to protect the paramount public interest in uninterrupted service efficiently performed at reasonable rates. Subject to the restrictions which flow from this principle, railroad management should be as free to exercise individual initiative and judgment in the determination of operating conditions as management in any other enterprise. Employees likewise should be as free to resort to the measures of organization or action necessary for their full protection as labor in other industries.

It follows from these fundamental considerations that it is not the function of government to substitute its judgment for that of private management and railroad labor in the determination of the conditions of their employment relations. On the contrary, the public interest is best served by the preservation to each carrier and its employees of such freedom of action as will enable them to develop such employment relations as will assure the continued existence of proper competition in service between the carriers. The public, through the governing authority, is not interested in those disagreements between carriers and their employees which are merely the ordinary incidents of individual bargaining, but only in such disagreements as in their nature and extent threaten approximately to interrupt a considerable part of the Nation's transportation service or burden it with disproportionate or uneconomic charges.

Therefore, that the employment relations of carriers and their employees, whether individual or collective, should be primarily established on each road between men and management on terms mutually satisfactory, and that they should be left free to reconcile their differences by adjustment methods of their own selection. Experience demonstrates that a continued arbitration body to which either party may refer these disagreements multiplies rather than minimizes these disputes.

The satisfactory determination of disputes regarding wages or working conditions involves the assembling and compilation of a large volume of data, touching not only information relating to rules, wages, and working conditions, but also touching a wide range of economic fact, and there should be a governmental body continuously collecting and assembling the data upon which sound conclusions can be reached with respect to wages, working conditions, and rules.

Digitized by Google

CONFLICTS IN THE INTERPRETATION OF LEGISLATION BETWEEN THE INTERSTATE COMMERCE COMMISSION AND THE SHIPPING BOARD.

The transportation act of 1920, in addition to the powers which it confers upon the Interstate Commerce Commission respecting rail carriers and water carriers between points in the United States, also confers certain powers upon the commission with respect to water carriers registered under the laws of the United States and engaged in foreign trade. The commission may require water carriers to file schedules showing for each vessel the ports of loading, dates upon which freight will be received, dates of sailing, and the route or itinerary of the vessel. The commission also has power to require the water carrier to name a rate, including port charges, which will be charged by it in addition to the regular railway charges for the transportation of goods to or from a foreign country.

The commission is also authorized by subdivision 13 of section 6 of the interstate commerce act to require any railway which has made arrangement with a water carrier, operated from a port in the United States to a foreign country, for the handling of through business between interior points in the United States and such foreign country, to enter into similar arrangements with any or all other lines of steamships operating from said port to the same foreign country. The object of these provisions apparently was, in part at least, to establish uniform through-route rates on shipments by rail and water carriers registered under the laws of the United States and engaged in foreign trade and to prevent discrimination between shippers, localities, or ships by special arrangement for through routes or agreements or divisions of the revenues arising from through shipments by rail and water carriers.

The commission also has power to establish rates, rules, regulations, and practices applicable to transportation by common carriers engaged in transportation from or to any place in the United States to or from a foreign country, but only in so far as such transportation takes place within the United States.

Section 19 of the merchant marine act of 1920, which was passed subsequent to the passage of the transportation act, provides as follows:

(1) The board is authorized and directed in aid of the accomplishment of the purposes of this act—

* * * * * * *

(c) To request the head of any department, board, bureau, or agency of the Government to suspend, modify, or annul rules or regulations which have been established by such department, board, bureau, or agency, or to make new rules or regulations affecting shipping in the foreign trade other than such rules or regulations relating to the Public Health Service, Consular Service, Steamboat Inspection Service.

(2) No rule or regulation shall hereafter be established by any department, board, bureau, or agency of the Government which affect shipping in the foreign trade, except rules or regulations affecting the Public Health Service, the Consular Service, and the Steamboat Inspection Service, until such rule or regulation has been submitted to the board for its approval and final action has been taken thereon by the board or the President.

(3) Whenever the head of any department, board, bureau, or agency of the Government refuses to suspend, modify, or annul any rule or regulation, or make a new rule of regulation upon request of the board, as provided in subdivision (c) of paragraph (1) of this section, or objects to the decision of the board in respect to the approval of any rule or regulation, as provided in paragraph (2)

Digitized by Google

of this section, either the board or the head of the department, board, bureau, or agency which has established or is attempting to establish the rule or regulation in question may submit the facts to the President, who is hereby authorized to establish or suspend, modify, or annul such rule or regulation.

The United States Shipping Board has taken the position that this section applies to the Interstate Commerce Commission.

Section 28 of the merchant marine act provides that no lower rate, fare, or charge shall be charged, collected, or received for the transportation within the United States of persons or property in foreign commerce than is charged for like transportation in domestic commerce unless the water transportation from or to a port of export or import shall have been or is to be in vessels documented under the laws of the United States. It also authorizes the Interstate Commerce Commission, upon the certification of the Shipping Board that adequate shipping facilities are not afforded by vessels documented under the laws of the United States, to suspend the operation of the provisions of this section and to terminate the suspension upon further certification of the Shipping Board that adequate facilities are so afforded.

The provisions of this section have been suspended indefinitely by the Interstate Commerce Commission upon appropriate certifications of the Shipping Board. Both of these provisions of the merchant marine act appear to be in conflict with the provisions of the transportation act above referred to.

In view of these conflicts it is suggested that the committees of Congress having jurisdiction over the subject promptly consider legislation looking to the reconcilement of these apparent inconsistencies and to the adoption of a permanent policy in respect to the authority of the Shipping Board and the Interstate Commerce Commission respecting rail and water rates.

RELATION OF FEDERAL AND STATE REGULATION.

Prior to the passage of the Federal control act the requirements of State laws and of State commissions with respect to intrastate rates and practices varied greatly. The differences affected not only the persons and localities using the railroad but also affected more or less adversely the revenues of the carriers as a whole, and also the amount of revenue from interstate traffic necessary to support the railroad systems of the country in their entirety, as well as individual railroads. The authority of State legislatures and State commissions as interpreted by the United States Railroad Administration was subordinate to the acts and regulation of the Federal Government during the period of Federal control, and this power was used to bring about a greater extent of uniformity as between intrastate rates, and between intrastate rates and interstate rates.

The respective powers of the Federal Government and the States with respect to rates, practices, and facilties of railroads are defined in the Federal and State Constitutions. The articles of the Federal and State Constitutions conferring these powers have been repeatedly construed by the Supreme Court, and it has been uniformly held that each is supreme in its own field, subject, however, to the limitation that States rates and regulations might not be such as to impose an undue discrimination against interstate traffic. Con-

Digitized by Google

versely, it would seem to follow that interstate rates may not be such as to impose an undue burden upon intrastate traffic.

Prior to the passage of the transportation act, however, the powers of the Interstate Commerce Commission were confined to and were exercised for the purpose of preventing undue discriminations as between persons and localities, and a level of rates representing an undue burden upon commodities or persons in transportation.

The transportation act of 1920 recognized a new principle—that transportation in order to be an efficient instrument of the national life and commerce must be insistent upon a basis of revenue which would invite investment to permit of the expansion and improvement of facilities necessary to keep pace with the commercial and industrial progress of the nation. To carry out this new principle the transportation act, first, authorizes the Interstate Commerce Commission to determine the fair rate of return upon the aggregate value of the property the railroads use in transportation, and direct the commission to establish such rates as would earn such a return; and, second, authorizes the Interstate Commerce Commission to remove any undue, unreasonable, unjust discrimination against interstate or foreign commerce. These provisions in the case of the Railroad Commission of Wisconsin *v.* the C., B. & Q. Railroad Co., decided by the Supreme Court February 27, 1922, were interpreted to authorize the Interstate Commerce Commission in the exercise of powers conferred by them to require raising the general level of rates in a State equal with a general increase in interstate rates; that is to say, to require such a level of intrastate rates as would result in the revenue from such intrastate rates representing a fair proportion of the cost of interstate traffic.

The national character of commerce is becoming more and more apparent, and nothing has been made more evident through the investigations of this commission than this fact. It is witnessed by an increase in the average haul of commodities, by the wide distribution of many commodities, the production of which is centralized in a few localities, and by the competition of far-distant communities centralizing at points of concentrated use and consumption. All of this emphasizes the wisdom of the recognition and assertion of the paramount authority of the Federal Government in the control of interstate transportation. On the other hand, the widely differing conditions found in different States and communities emphasizes the importance of State control of such matters as are of local concern, including the rates and regulations local and only State-wide in application. No centralized authority, however efficient or democratic, can with reasonable dispatch and with due regard for local requirements consider and finally determine the vast number of questions of rates, regulations, practices, and facilities which properly and inevitably arise in connection with concerns wholly within a State; and the field of regulation of State legislatures and of State commissions ought and will continue to be a very wide one. It is probable that no court will ever be able to lay down a rule delimiting the respective Federal and State powers with respect to transportation with sufficient definiteness to avoid conflicts in the future in the exercise of their representative powers.

Digitized by Google

All of these considerations, it seems to us, lead logically to the conclusion that there is need for the establishment of regional agencies of the Interstate Commerce Commission to consider and adjudicate questions of regional application and to cooperate with the State commissions with a view of minimizing conflicts between State and Federal regulations as to rates, facilities, and practices, and in order that these conflicts may be disposed of in larger measure by consultation and cooperation between State and national authorities, thus limiting the range and number of cases to be judicially determined by the Federal authorities. In such regional agencies the State commissions should have authoritative representation in all cases involving intrastate rates, facilities, and practices in which the State commission is interested.

A higher degree of such cooperation is suggested by the transportation act of 1920, which provides that the Interstate Commerce Commission "may confer with the authorities of any State with respect to relationship of rate structures and practices of carriers, and may hold joint hearings with State commissions with the object of removing conflicts existing or which may arise with respect to the level of application of intrastate and interstate rate regulations and practices."

This idea is referred to by the Supreme Court of the United States, evidently with approval, in the Wisconsin case, in which the Supreme Court says:

> So, too, in practice when the State commissions shall recognize their obligations to maintain a proportionate and equitable share of the income of the carriers from intrastate rates, conference between the Interstate Commerce Commission and the State commissions may dispense with the necessity for any rigid Federal order as to the intrastate rates, and leave to the State commissions power to deal with them and increase them or reduce them in their discretion.

STATE LEGISLATION—FULL-CREW LAWS AND LENGTH OF TRAINS.

One of the difficulties in the operation of steam railroads to-day is the conflict of legislation and regulation between the various States with respect to train operations. Undoubtedly the most burdensome financially of any of the State laws are those known as the full-crew laws in effect with varying requirements in 21 States, the enactment of which was predicated in the main upon a reduction of railroad casualties.

The law passed in the State of Washington in 1911 makes mandatory a crew of six men to operate a freight train of 25 or more cars. An act passed in the State of Oregon in 1913 requires that there shall be six men in a crew handling a freight train of 40 or more cars. In the State of California, by an act passed in 1911, a minimum of five men is required for a freight train, with six men for a train of 50 cars and seven men for a train of 76 cars, with varying requirements according to railroad grades to be traversed. In the State of Nevada, by an act of 1913, five men are required for the operation of a freight train of from 3 to 50 cars; train of more than 50 cars six men. A freight train of 30 cars may be operated through New Jersey with a train crew of five men, but no freight train of over 25 cars can enter New York with less than six men. Thus it is seen that there is no uniformity of regulation even where

Digitized by Google

operating conditions are more or less identical. Not only are these laws applicable to freight-train operation but also to passenger-train operation. In Maine, for example, one brakeman is required for every two passenger cars. In New Jersey passenger trains of four or more coaches and one baggage car require six men.

Not only is there variation in the requirements of the State laws respecting the number of men constituting a crew, but the statutes limit the number of freight cars per train and are lacking in uniformity in regulation of various classes of service.

Efficient operation of steam lines at a minimum cost can not be realized to the fullest extent under requirements as to operation which are different in different States and require continual changes of operating methods, accentuating costly operating practice with resultant increase in operation expense.

The air brake has undergone rapid development since these laws passed. One hundred per cent of the cars are now equipped with the air brake, but the appliance is one which is undergoing constant study, experimentation, and improvement. A similar statement might be made as to the improvement in automatic coupling devices. The need which might have been claimed for added personnel in freight-train operation a decade or more ago to promote safety of operation does not, therefore, exist to the same extent under present conditions. A most careful investigation fails to show that casualties have actually been reduced by reason of these laws. A detailed examination of final causes, which account for the railroad casualties in the United States, affords a conclusive measure of the remedial value of the "full-crew laws." After several analyses we are compelled to assign at least 97.6 per cent of all these casualties to causes irrelevant to the size of a train crew.

Most of the so-called full-crew bills were passed in 1911, 1912, and 1913, since which time three have been repealed. The Missouri law was repealed in 1914, the year following its enactment. The Pennsylvania and Indiana laws were repealed in 1921. It was shown, for example, in Pennsylvania that the rigid full-crew law did not have the effect of reducing casualties, for during the first year that it was effective casualties increased to 12,213 over 9,563 in the previous year.

The number of cars per freight train on all railroads of the United States increased from 26.8 in 1904 to 34.3 in 1914. Since 1914 the number of cars per train has not exceeded 37.

Below is a brief summary of the laws now on the statute books of 21 States. The variance in the character of regulations is manifest. Where operating conditions are similar, requirements in regard to full-crew laws or the number of men for different lengths of trains should be uniform.

State.	Service.	Date of act.	Crew requirements.
Arizona	All trains	1903	1 brakeman every 600 tons.
	Passenger	1912	Less than 6 cars, 5 men; 6 cars or over, 6 men.
	Freight	1912	Less than 40 cars, 5 men; 40 cars or more, 6 men.
	Local freight	1912	6 men.
	Light engine	1912	Flagman or conductor. Train limit, 70 cars.

Digitized by Google

State.	Service.	Date of act.	Crew requirements.
Arkansas	Freight	1907	6 men, 25 cars or over.
	Passenger	1909	5 men.
	Switching	1913	6 men.
California	Passenger mail express	1911	Less than 4 cars, 5 men; 4 cars or more, 6 men.
	Freight	1911	Minimum, 5 men. Half mile, 1 per cent or less grade, 50 cars, 6 men; 76 cars, 7 men; over 76 cars, 1 additional man each 25 cars. Similar requirements where grade is in excess of 1 per cent.
Connecticut	Passenger	1902	1 brakeman each car; except when double-action brake is used, 1 brakeman every 2 cars.
	Freight and passenger	1913	Commission's power to regulate size train crews.
Maine	Passenger	1908	1 brakeman every 2 cars.
Maryland	Freight	1911	30 cars or more, 6 men.
Massachusetts	All trains	1913	Public service commission regulate.
Mississippi	Passenger, mail, express, and freight.	1914	5 men each train.
Nebraska	Passenger, mail, express	1913	4 men 5 cars or less; over 5 cars, 5 men.
	Freight	1913	5 men.
	Local freight	1913	6 men.
	Light engine	1913	3 men.
Nevada	Passenger or freight	1913	2 cars or less, 4 men; 3 to 50 cars, 5 men; more than 50 cars; 6 men.
New Jersey	Passenger	1913	3 coaches, 1 baggage, 5 men; 4 or more coaches, 6 men.
	Mail and express	1913	4 cars or more, 5 men.
	Freight	1913	Less than 30 cars, 5 men; more than 30 cars, 6 men.
New York	....do	1913	25 cars or less, 5 men; more than 25 cars, 6 men.
	Trains other than freight	1913	5 cars or more, 5 men.
	Light engine	1913	3 men.
North Dakota	Freight	1905	2 brakemen each train 45 cars; 1 additional every additional 10 cars or fraction.
Ohio	Passenger	1911	5 cars, 4 men; if 4 are day coaches, 5 men. Trains of 5 cars with 2 or more cars carrying passengers, 5 men. Trains of 7 cars with 2 or more carrying passengers, 5 men.
	Freight	1911	5 men.
	Light engine	1911	3 men.
	Switching	1913	5 men.
Oregon	Passenger mail express	1913	4 or more cars, 5 men.
	Freight	1913	40 or more cars, 6 men.
	Local freight	1913	6 men.
	Light engine	1913	3 men.
South Carolina	Passenger	1912	1 brakeman every 2 cars (not applicable where power brakes are used).
	Freight	1912	1 brakeman on last car of train.
Texas	Passenger	1911	4 men, 1 man on last car.
	Freight	1911	5 men.
	Light engine	1911	3 men.
Washington	Passenger, mail, and express	1911	4 or more cars, 5 men.
	Freight	1911	25 or more cars, 6 men.
	Light engine	1911	3 men.
West Virginia	All trains	1915	Public service commission regulate.
Wisconsin	Passenger	1911	3 cars or less, 4 men; more than 3 cars, 2 brakemen.
	Freight	1911	3 cars or more, 5 men.
	Switching	1913	Railroad commission regulate.
The following "full crew" Indiana laws of 1909, 1911, and 1913, and Pennsylvania laws of 1911 were repealed in 1921:			
Indiana	Passenger, mail, and express	1909	Less than 5 cars, 4 men; 5 cars or more, 5 men.
	Freight	1909	Less than 50 cars, 5 men; more than 50 cars, 6 men.
	Light engine	1909	3 men.
	Switching	1911	5 men.
	Electric	1913	Railroad commission power to require flagmen.
Pennsylvania	Passenger, mail, and express	1911	4 or more cars, 5 men.
	Passenger trains	1911	Not over 3 coaches and 1 baggage car, 5 men. Trains of 4 or more coaches, 1 baggage car, 6 men.
	Freight	1911	Less than 30 cars, 5 men; more than 30 cars, 6 men.

Digitized by Google

A careful estimate, made in 1914, of the additional expense caused by the operation of the full crew laws of all States to railroads totaled $5,769,174. No corresponding figures have since been compiled, but as the ratio of increase of pay for the men affected by the operation of the law has exceeded 100 per cent it may safely be estimated that the laws as in force in 1914 now entail an annual operating expense in excess of $10,000,000.

The number of men composing the crew for different lengths of trains and other operating conditions should be such as to insure the safety and convenience of passengers and crew and the safe and prompt carriage of freight, but legislative or regulatory requirements, whether by State or Federal agencies, which differ from each other and tend to increase operating cost and to decrease the efficiency of operation should be minimized and the State and Federal authorities controlling operating practices should cooperate with a view to making uniform such requirements as may be necessary to insure the safety and convenience of passengers and crew and the safe and prompt carriage of freight.

REGULATION OF MOTOR TRANSPORTATION.

The phenomenal growth in motor transportation and in highway construction in recent years is shown in a previous chapter. In many States the carriage of goods and passengers for hire by motor vehicles has become an established business. This growth of motor transportation has given rise to many new problems of regulation. Except in the New England States motor transportation is largely intrastate and consists in transportation of goods and passengers in the cities and between the larger communities and in the distribution of goods within relatively small radius of the larger centers of population.

Regulation of motor transportation so far has been exclusively a State concern, and the legislation as well as the regulations of State regulatory bodies have taken a rather wide range, including regulation of speed, width of tires, limitation of truck-carrying capacity, headlights, and many other features having to do with the protection of the public safety and convenience.

No broad basis of fact upon which regulation of motor traffic can be predicated has so far been established. Studies have been made in various localities of the trend, influence, and effect of motor transportation on rail transportation, upon the maintenance of highways, the trend and volume of traffic, etc. These studies, however, while of great value from a point of view of local regulations, are not sufficiently comprehensive to permit laying down at this time the broad general principles of State or Federal regulations. It is already clear, however, that there is a wide variation in principle and application of the various State and local regulations, which more or less affect intrastate traffic where it exists. The studies of local motor transportation should be expanded as rapidly as possible to afford a definite and comprehensive basis for uniform regulation of motor transportation in order that the inconvenience, expense, and inefficiency of operation occasioned by a lack of uniformity in State and Federal legislation in the future may as far as possible be avoided.

Digitized by Google

In order that State legislation may be based upon accurate knowledge of the facts of motor transportation it is desirable that studies of trends incident to motor transportation should be continued currently with its growth, and that legislation should be based on sound studies of these trends and their relation to and effect upon other means and modes of transportation.

CONTROL OF EXPENDITURES ON INLAND WATERWAYS.

A reading of the chapter of this report dealing with the matter of inland waterways indicates that vast expenditures upon improvements on lakes, rivers, and canals have been made with but little reference to the existing and potential tonnage available. The commission is convinced that in the expenditures for improvements of rivers, lakes, canals, and harbors heretofore made too little attention has been paid to the production to be developed, the existing transportation facilities in the territory, and the existing or potential water tonnage. Much of the expenditure for water transportation has not produced traffic sufficient to justify the expenditure. Water and rail transportation should supplement each other. Water transportation should not be developed solely for the sake of creating water competition with rail transportation. The effect of such development is to increase rates in the sections of the country not favored with water transportation, frequently without corresponding benefits to the favored territory. Water transportation should be developed where it will supplement and properly correlate with existing transportation facilities and develop sufficient tonnage to justify the expenditure, including original cost, maintenance, and the operation of any works incident to the improvement.

In order that adequate consideration may be given to the relation between existing transportation facilities and facilities proposed to be created or improved by expenditures on inland rivers, harbors, or canals, the commission recommends that the War Department be definitely charged with the responsibility of analyzing and reporting upon the commercial feasibility and necessity of such proposed improvements, to the end that before any substantial appropriation is authorized or made the Congress will be fully advised as to the commercial possibilities of the proposed development, including water power and its relation to a properly correlated transportation system.

REGULATION OF COASTWISE TRAFFIC.

American coastwise shipping is protected from foreign competition. No foreign vessels may engage in this traffic.

At present there is no definite relationship or equality between rates for transporting commodities between two points in the United States by water and by rail, nor is there any stability or uniformity in rates by water between different commodities or upon the same commodity. Water rates are made on a so-called conference or contract basis. A vessel may discriminate at its option between one shipper as against another shipper upon the same article and

Digitized by Google

between two ports, which practice is radically different from that required of rail carriers. Rail carriers are prohibited by sections 2 and 3 of the interstate commerce act from giving undue or unreasonable advantage to any person, firm, corporation, or locality, or from discriminating in their rates, fares, or charges between connecting lines or between shippers or receivers, or from giving undue preference to any connecting lines in the distribution of traffic.

The volume of shipping available and the volume of tonnage offered vary. The rate, being made by competitive conditions, depends upon the volume of tonnage offered and the number of ships available to carry it. In this respect also the conditions surrounding water transportation differ from the conditions surrounding rail transportation. The cost of water transportation is normally below the cost of rail transportation. This fact, coupled with the freedom from regulation which permits the shipowner to charge a rate which will get the traffic, is said to disadvantageously affect the tonnage of the rail carrier in some instances, and it has been suggested that this situation be remedied by giving the Interstate Commerce Commission authority to fix coastwise water rates. The object of this proposal, therefore, is to make it possible to fix competitive rates of water carriers upon a level which would divert the tonnage that would otherwise be carried in ships to railroads. The commission believes that such a policy would be contrary to the declared purpose of Congress to develop both rail and water transportation. Indeed, it is opposed to sound policy, which suggests that a locality is entitled to the benefits arising from its peculiar location and the natural advantages which pertain to it.

Considering the wide difference of conditions applying to water carriers, compared to those applying to rail carriers, the commission does not believe that the regulation of coastwise water carriers is feasible. While there are certain well-established lines plying regularly between American ports upon more or less definite schedules, and having more or less definitely established rates, the number of ships in a given trade will vary with demands for tonnage and with the total number of ships available. The cost of operation of ships and service offered also differ widely. Adequate and effective regulation of rates under these circumstances is impossible. Regulation of water transportation to be effective must include, in addition to regulation of rates, regulation of facilities, and service to be furnished, which, in its turn, must be predicated upon the obligation of the water carrier to carry all tonnage offered at the given rate without discrimination. Such an obligation can not be imposed in a traffic which ships may enter or leave at their option.

Section 500 of the transportation act declares it to be the policy of Congress "to promote, encourage, and develop water transportation, service, and facilities in connection with the commerce of the United States, and to foster and preserve in full vigor both rail and water transportation." The commission believes that this policy can best be carried out under legislative conditions which give to each kind of transportation the full advantage of its peculiar character.

Regulation of rates for water transportation as now proposed contemplates such adjustments of water rates as would remove the normal rate advantage due to lower cost of operation of water car-

Digitized by Google

riers as compared with railroads. The commission believes that legislation removing such advantage is opposed to the declared policy of Congress, and in view of the difficulties suggested herein, can not be made to operate without discrimination, if indeed it can be made to operate at all.

The quality of service offered by railroads, compared with the quality of service offered by water carriers, is so advantageous to the railroad as to eliminate water transportation altogether in the absence of a differential in favor of water transportation in most cases.

Water transportation contributes to railroad tonnage. Railroad transportation contributes to water tonnage. It is doubtful if any considerable loss of tonnage to the railroads results from water competition. On the other hand, water tonnage is usually assembled at and distributed from the ports by the railroads.

Altogether, the commission does not believe that regulation of rates on coastwise traffic is feasible or necessary under present conditions, and would be even less so under normal water-transportation conditions.

TRANSOCEANIC MERCHANT MARINE.

The total world's tonnage of ships is 62,000,000 gross tons. The prewar tonnage was 48,000,000 gross tons. At present 1,640 seagoing vessels, amounting to 6,199,468 gross tons, are being built. This construction program, as well as the increase previously referred to, is largely due to a program originally undertaken to meet war requirements. The increase in American tonnage is the largest. We have before us a credit nation's opportunity for world trade, and the ships to carry that trade; and we are squarely confronted with the determination of the governmental policy we shall pursue in taking advantage of the opportunities presented.

The American merchant marine now consists of 1,943 vessels of 5,387,056 gross tons, privately owned, and 1,803 vessels of 8,078,061 gross tons, controlled by the United States Shipping Board. Disregarding the inefficient and uneconomic war-built vessels, it is probable that the privately owned and Government fleets are substantially equal. The losses incident to the operation of the Shipping Board tonnage have been enormous, aggregating since the close of the war more than $100,000,000. The capital cost of American ships, as well as the cost of operation, is relatively greater than the capital cost and cost of operation of ships of most of the other countries of the world. Part of this excess capital and operating cost is due to the higher price and wage levels and higher standards prevailing in this country. Part of it is due to the requirements of our navigation laws. Under these laws a vessel flying the American flag can not be manned, equipped, and operated upon the low cost basis of the foreign-owned vessels with which it must compete. The losses incident to Government operation under these conditions are made up out of the National Treasury. Private owners must either pocket their own losses in operation or tie up their ships.

It seems clear that American ships can not compete under present laws on terms of equality with foreign ships, and it is not probable that American ships could compete with foreign-owned ships

Digitized by Google

even under conditions permitting equal freedom with foreign ships in the manning, equipment, and operation of the vessels. Even if this were possible, it is altogether unlikely that the American people would be willing to wholly abandon the higher standard of manning, equipment, and operation which our present navigation laws require.

These facts seem to lead inevitably to the conclusion that the American merchant marine can not be maintained on a basis commensurate with the requirements of our world trade, or the importance, power, and influence of the United States in world affairs, without some sort of Government aid. If such Government aid is extended, it ought clearly to be limited to such aid as will fairly represent the difference in capital and operating cost required by higher American standards and more burdensome American navigation regulations, compared with foreign capital costs and costs of operation and foreign navigation requirements.

In view of the fact that the question of the maritime policy of the United States, including the relationship of ocean rates to domestic rail and water rates, is under consideration by committees of Congress, no further recommendation with respect to this policy is made in this report.

PANAMA CANAL TOLLS.

The movement of commodities by water between the Atlantic and the Pacific through the Panama Canal has rapidly increased during the last two years. This increase was particularly noticeable in 1921. New lines of boat service have been established and the lines already in the trade have increased their sailings. An increasing volume of cargo is offered. The report of the Governor of the Panama Canal shows that lumber shipments from the Pacific Northwest to the Atlantic coast during the first quarter of the calendar year 1921 were 42,495,579 feet, compared with 1,202,229 feet in the corresponding period of the preceding year. Lumber is now moving from the Pacific coast to Atlantic ports at a monthly average of approximately 34,000,000 feet. This is equivalent to 1,360 carloads of revenue freight per month had the business moved via the steam lines. On the basis of an average rail rate of 87 cents per hundredweight from the Pacific coast to eastern territory and 60,000 pounds per car, the present movement through the canal, if it were transferred in its entirety to movement by rail lines, would mean an addition of approximately three-quarters of a million dollars per month to the gross operating revenues of the transcontinental and eastern lines.

The tendency of the movement by water versus movement by rail and the increased use of the canal is shown in Table 1109. California oranges and Washington apples are now being shipped successfully through the canal to eastern markets, and growers' associations have entered into temporary contracts with steamship companies which will result in the diversion of heavy tonnage of fruit shipments from the rail to the water routes.

It was not until January, 1921, that the California citrus fruit growers commenced using the Panama Canal. In the year 1921 just ended, California shippers transported 39,639 boxes of oranges and

Digitized by Google

139,807 boxes of lemons through the canal to the Atlantic seaboard, and 23,655 boxes of oranges and 200 boxes of lemons through the Panama Canal to foreign markets.

Shipments from the Atlantic to the Pacific ports have increased in like manner. The coastwise trade through the Panama Canal during the fiscal year ended 1921 equaled 1,430,977 net tons. The principal items moving from the Pacific to the Atlantic ports are wheat, food products in cold storage, lumber, flour, copper, canned milk, fruits, and fish; and from the Atlantic to the Pacific ports iron, steel, merchandise, and canned goods. The competition of the coast-to-coast steamship lines has been one of the outstanding factors in the reduction of the 1921 tonnage of transcontinental rail carriers. The rates of carriers by water lines through the Panama Canal are approximately three-fifths of the existing rates, all rail.

The exemption of coastwise shipping from the payment of tolls would result, first, in reducing the revenue receipts of the Panama Canal operation by approximately $1,715,458 on the basis of the 1921 tonnage; and, second, in further reducing the water rates, which are now considerably lower than rail rates. The exact effect of elimination of Panama Canal tolls on the coast and upon competition between water and rail carriers can not be accurately assessed, but the commission is of the opinion that tolls through the Panama Canal should be based upon the cost of operation and the value of the service rendered, rather than upon the effect of the tolls upon the volume of traffic, or in diverting tonnage from rail lines to water lines or from water lines to rail lines. Each type or medium of transportation is entitled to the advantage of its particular characteristics by which trade is attracted to it. Tolls should not be levied or remitted solely for the purpose of diverting traffic from rail lines to water lines or from water lines to rail lines.

Digitized by Google

Chapter XI.

FOREIGN RAILWAY SYSTEMS.

Transportation throughout the world has been affected to a greater or less degree by conditions created by the World War and are still subject to the economic and political dislocations which followed it, but it is safe to say that state-owned railroads have not recovered from the effects of the war or met the economic dislocations with greater effectiveness than those privately owned and operated. Indeed, state-owned railroads have, as a rule, less nearly returned to normal conditions and readjustment to changed economic conditions than privately owned and operated railroads. In general, also, service and facilities have deteriorated, notwithstanding enormously increased expense of operation and revenues. Deficits in operation have been encountered on most of the state-owned railroads, which have been met through the imposition of taxes. A review of the operating conditions in Canada and in European countries may prove valuable as an indication of the relative condition and efficiency of railway transportation in other countries and in the United States.

CANADA.

The labor situation and operating results of Canadian railroads have closely paralleled those of the United States. The total mileage of all lines in Canada is approximately 39,384.

At present there is a distinct rivalry between the Government-owned railroads, known as the Canadian National Railways, and the privately owned and operated Canadian Pacific Railway Co. The Canadian National Railways is a composite system of the original Canadian Government railways and those lines in Canada which have been unable to finance themselves independently, thereby forcing the Government to take them over in order to maintain the public service.

The year 1921 was the worst in Canadian railway history. In January the ratio of operating expenses to gross earnings was over 108 per cent for all railways as a group. While the Canadian Pacific was holding its own, the Government system was creating an adverse operating expense ratio of 125 per cent. Fifty-two per cent of the total operating mileage of Canada was depending more and more upon the treasury of the Dominion.

Traffic was falling off from month to month, very much as it was in this country. Curtailment of operating expense was necessary, and in April, 1921, Canadian roads began a slashing of expense which has had no precedent in the railroad annals of that country. While complete financial statistics for the entire year are not available at this writing, the operating reports for the first

Digitized by Google

eight months show that during that period the gross earnings of class 1 railroads had an aggregate of $277,478,122, as compared with $282,841,087 for the corresponding eight months of 1920. Operating expenses, on the other hand, totaled $268,266,928, as against $285,592,109 for the preceding year. The subsequent economy and supervision over both privately operated and national railways is largely responsible for Canadian systems coming through the year without a financial disaster.

Freight and passenger rates were increased to approximately the same level as were granted the railroads in this country, although during the fall of 1921 freight rates were ordered reduced by 25 per cent, which amounted to something over $3,000,000 in freight revenue. While some temporary benefits have been realized by a small increase in the volume of traffic, the increase in the fixed charges of the Canadian National Railway arising out of the larger capital liability will probably wipe out any benefits from increased net earnings. The deficit on the Canadian National Railway for 1921 was $72,346,234.

Canadian railways have been affected directly by the policy adopted by the United States Railroad Administration and by orders of the United States Labor Board. Even where conditions in Canada were not comparable with those in this country, Canadian lines have been forced to follow the trend of events in the United States. The fundamental causes of the trouble of systems in both countries have become more and more identical. Errors of regulations during Federal control in the United States have been equally reflected upon the railroads of Canada.

The outlook for the year 1922 is somewhat brighter, as the trend of expenses is downward; and if the general economic stability of the country produces a normal volume of freight traffic, improvement should be shown. There have been substantial additions to equipment, notably by the Canadian National system, and the railroads are in fair physical shape to handle the business of the country.

ENGLAND.

The mileage of 130 railroads which were taken over by the Government during the war and not returned until August, 1921, was 21,546. The 46 railroads not taken over by the Government equal 499 miles of road. The mileage of all main tracks in Great Britain and Ireland is 36,499; and if the mileage of sidings is added, or 14,256, the total is brought up to 50,755 miles of track.

Great Britain is essentially an exporting and importing nation. It can only live by the trade it carries on with other countries. During and since the war poverty has become so keen that the labor classes are working for considerably lower wages than they did before the war. These conditions naturally affect the general economic structure of the country and influence trade. They will have a great deal to do in the next five years with the prosperity of English railroads, and the forecast is that they are face to face with the constantly decreasing tonnage, high operating expense, and general depression.

Digitized by Google

During the past 50 years Great Britain's railroad developments have been gradual and along well-conceived lines. During the war the Government took over the most important railroads and operated them, and did not return the roads to their owners until August, 1921, upon the passage of the so-called railway act. This Government control has a dominating influence upon the present condition of the English railroads, and for that reason the commission desires to go into this situation somewhat in detail.

Although the order in council conferred upon the Government the right to control the whole of the railways in Great Britain, these powers were not utilized to their full extent. The desire of the Government was to exercise that control over only such lines as might be directly or indirectly concerned in the transport of military, naval, or other traffic of national importance in a time of emergency; and although every line that could possibly be included in the application of this principle was taken over, there remained 46 in regard to which no action was taken. The aggregate mileage of the roads not taken over was 499 miles, or 2 per cent of the total railway mileage of Great Britain and Ireland.

These 130 railways taken over and returned, and their approximate mileage, might be classified thus:

	Number.	Miles.
Leading independent railways	21	19,114
Smaller independent railways	24	684
Joint railways	19	909
Lines worked by other companies	53	652
Electric railways	5	90
Light	8	97
Total	130	21,546

The capital value of the lines taken over was 1,200 million dollars. That of the lines not taken over was 42½ million dollars.

Allowing for small companies whose revenue and expenditure were included in the accounts of other railway companies, the number of those with which the railway executive committee had direct relations under Government control was 80.

LENGTH OF LINE AND LENGTH OF TRACK.

The figures given above concerning the railways taken over relate to geographical miles, otherwise "length of line," and not to "length of track"—an important detail in regard to which British railways do not generally get all the credit they deserve in the comparisons which international statistics make between them and railways overseas.

In England and Wales, at least, the railways have a greater proportion of second and other multiples of track than those of any other country in the world. The proportion of single track to length of line is, in fact, only 33 per cent in England and Wales, as compared with 59 per cent in Scotland, 80 per cent in Ireland, 57 per

Digitized by Google

cent in France, 57.4 per cent in Prussia (State railways), and 61.7 per cent in Germany (entire system). In England there are to be found up to 22 separate tracks of railway laid side by side; yet a mile of such railway, when owned by a single company, counts as no more than 1 mile in respect to "length of line." On this basis a mile of the perfect network of lines at Crewe, for example, is equivalent to no more than a mile of single-track line in the most sparsely populated district of any country overseas.

At the end of Government control the deficit from unified operations in August, 1921, approximated $250,000,000, although rates of carriage were substantially increased in the latter part of 1919 and at the beginning of 1920. Freight rates were increased a total of 112 per cent and passenger rates 75 per cent. On January 1, 1922, the British Government owed the corporate companies $125,000,000, which is provided for in the so-called railway act.

The railway statistics for all lines in England, Scotland, and Wales from September 12, 1920, to and including August, 1921, show that the total gross receipts for Great Britain during that year was $1,240,000,000, contrasted with an expenditure of $1,224,000,000, or an operating ratio of 98.8 per cent. The Government compensation to the owners of the lines in 1920 amounted to $213,000,000. This poor financial showing was made in spite of the fact that on January 15, 1920, freight rates were further increased by about 50 per cent.

The total engine mileage of all railways in Great Britain in 1920 was 575,476,239 miles, an increase of 8.03 per cent over 1919. Train mileage was 378,070,430, as against 348,911,830 in the year 1919. The average receipts per train-mile from passenger train traffic fell from $2.55 in 1919 to $2.40 in 1920, and from freight train traffic they increased from $2.48 in 1918 to $4.20 in 1920. On class 1 railroads of the United States the average receipts per train-mile from passenger train traffic in 1919 was $2.56, and in 1920 $2.89; for freight train traffic in 1919, $6.20, in 1920, $6.87. The average haul per ton of freight in the United States is approximately four times greater than in England.

That Great Britain has been suffering from post-war conditions to a greater extent than has the United States, in the relationship of transportation to agriculture and industry, is indicated by an extract from the Daily Mail Year Book of 1922 of London, reading as follows:

> However, if the railways are to be put into a solvent condition, there is urgent need for an immediate increase in the volume of goods and mineral traffic, and this does not lend itself to the same kind of stimulating treatment as the passenger traffic. The present high railway rates were imposed on September 1, 1920, the theory being that they would wipe out the accumulated deficit on working by July 31, 1921, and that as from August 1, 1921, they could be reduced. The two coal strikes and the great depression of trade which intervened have completely prevented the attainment of the looked for equilibrium. So far from additional revenue being earned, the railways have been losing money for months. Consequently, the railway companies are not yet in a position to effect any lowering of those rates which constitute such a severe tax on trade and industry.

Digitized by Google

This situation is further portrayed in an extract from the same yearbook covering railroad problems in England for 1921:

A new project for the improvement of transport facilities between the north and south of England is to be laid before the ministry of transport. It is proposed to cut a new tunnel under the Thames between Gravesend and Tilbury, and to construct a new connecting railway across Essex, Harts, and Beds, effecting junctions with the Great Eastern main lines at Ingatestone and Sawbridgeworth, the Great Northern at Stevenage, the Northwestern at Luton, and the Midland at Bedford. This, however, is but a slight variation of Sir Edward Watkins' scheme of establishing direct communication between Dover and the southeast of England and the Midlands and the north for the huge volume of traffic which at present goes through London. Unfortunately, the prospect of any new railway schemes entailing capital expenditure fructifying for some time to come is remote. The depreciation of existing railway securities, which is among the effects of the war and injudicious Government control, precludes the companies from committing themselves to undertakings dependent upon the raising of fresh capital. Before the war the railways used to spend on an average from 20 to 30 millions a year on new capital works, whereas they are now spending only from 4 to 5 millions. Such a big shrinkage represents a heavy loss to wage earners in the railway industry, and helps to swell unemployment. The railways are thirsting to set to work upon improvements and extensions which are urgently needed for accommodating traffic and creating better facilities, but they are paralyzed by the financial problem.

FRANCE.

There are approximately 24,885 miles of railroads in France, divided into seven systems. Five of these systems are owned by the State, but have been given over for operating purposes to private companies. These concessions to private operators expire on all five systems between 1950 and 1960. The two other railways are State owned and operated.

The war imposed a tremendous strain upon the French systems. There were about 1,802 miles of line destroyed or damaged, 3.480 miles of track, 1,510 bridges, 12 tunnels, 590 buildings, and 150 water tanks demolished. Five of the larger and principal shops in France had to be entirely rebuilt. At present all of these demolished properties have been restored and are working on about the same basis as in 1914. As a result of purchases and delivery of equipment which the terms of the armistice required from Germany, the railways of France now possess about 1,000 more locomotives, or a 6 per cent increase over the 1914 period. They also have an addition of 50,000 freight cars, or 15 per cent increase over the 1914 period. From November 1, 1918, to June 30, 1921, in their own workshops and in those of private car companies, the French railways repaired 2,720 passenger cars, 863 baggage cars, and over 200,000 freight cars. In 1913 the percentage of bad-order locomotives on hand equaled 13.5 per cent of the ownership, and on December 1, 1918, 18.4 per cent, and at the present time 16.6 per cent. This situation is expected to become normal again at the end of 1922.

An almost daily car shortage now exists in France, with the consequence that the daily average car loadings have increased. The number of freight trains in use is approximately on a prewar level, there being in daily operation at the present time 832 trains, whereas in 1913 there were 885. The average haul has greatly increased. As shown on one typical railroad of France where the daily mileage is now nearly 35,540 as against 29,827 in 1913 and the tonnage carried

Digitized by Google

is 20,000,000 tons as against 17,000,000 in 1913. A greater transportation in the carrying of commodities by express companies is noted, especially in the transportation of vegetables and fruits. For instance, the Paris station of the French Express Co. received in June and July, 1921, 50,000 tons of goods for markets as compared with 48,000 tons in 1920 and 32,000 tons in 1913.

While the situation with reference to railway finances has improved more rapidly in France than in any other European country the disastrous effects of the war are still apparent. During 1920 the French railways created a total deficit of $601,400,000; and the adjusted deficits for the year 1921 are approximately $368,200,000; and it is estimated that the deficits for 1922 will be very close to $230,400,000.

On March 31, 1918, passenger and freight rates were raised 25 per cent. On February 15, 1920, the passenger rates were further increased approximately 50 per cent and the freight rates 115 per cent. Hence at the present time the freight rates in France are approximately 140 per cent greater than in 1914 and the passenger rates 75 per cent greater.

ITALY.

The total mileage of the Italian railroads in December, 1920, was 11,479 miles. With a very few exceptions the Italian railroads are owned and operated by the Government. At present the Government is making a critical examination of the financial condition of the railroads. Since the inauguration of Government ownership and control in 1915 the balance sheet has been showing a loss, and it is reported that for the year 1920–21 that deficit will be $280,000,000. The revenues are estimated at $600,000,000 and the expenses at $880,000,000. The freight and passenger rates were increased with a view of reducing the 1920–21 deficit. Freight rates have been increased by 400 per cent above the rates of 1915, while the passenger fares have been increased approximately 250 per cent. During January and February, 1921, passenger traffic decreased from 23 to 58 per cent, as compared with the traffic of November-December, 1920; and during the same period freight traffic decreased about 50 per cent. The freight costs in Italy have been increased to such an extent as to create an accentuated disproportionate relativity with commodity prices and to such an extent that merchants are fast diverting their business to the motor-vehicle routes, whose rates of carriage in many instances are 50 per cent lower than those now applied on the railroads. The Italian Parliament recently voted $400,000,000 for the improvement of railway facilities, but even this amount is not enough to carry on the necessary work. To apply on the reparations account the Italian Government has called upon Germany to furnish much of the materials for the improvements of her railways and for the electrification of the most important lines. The greatest efficiency in the railways of Italy is in the increase of new equipment and double track.

SWITZERLAND

With 3,883,700 population Switzerland has a total of 1,895 miles of line owned by the Government and approximately 1,600 miles of smaller narrow-gauge or cog-wheel or tramway lines owned

Digitized by Google

private corporations. The financial situation of both federal and private lines in Switzerland is serious. The Switzerland railway receipts for the seven months of 1921, compared with those of the corresponding period of 1920, show that the passenger traffic rose from $26,780,000 to $27,600,000, or approximately 3 per cent. The tremendous increase in passenger fares has failed to produce increased earnings to any appreciable extent, as practically 90 per cent of the passengers chose to ride on the third-class basis as soon as the fares were increased. The results of the first 10 months working of the Swiss Federal Railways of 1921 are worse than those of the corresponding period of 1920, which was considered a very unfavorable year from a railroad-receipt standpoint. Unlike France and other European countries more directly affected by the war, the rolling stock has deteriorated but little, and the roadway and structures have been kept in fairly good condition. The Swiss railways, however, will not fully recover financially until all of Europe recovers. A great percentage of the tonnage is represented by international movement, and this tonnage has declined perceptibly, being measured by the economic conditions of Switzerland's neighbors.

RUSSIA.

The mileage of railways of Russia has increased from 14,070 miles in 1880 to approximately 37,000 miles in 1921. The density of traffic has increased three and a half times during this period and the number of ton-miles per inhabitant increased approximately five times in 17 years. In Asiatic Russia the mileage increased to approximately 10,000 miles from 1890 to 1918, not including the Russian-Chinese Railway. Railway construction reached the maximum during the decade from 1895 to 1904. At the beginning of the war there was approximately 45,500 miles of railroad in Russia, two-thirds of which was owned by the Government. At the beginning of 1915 there were under construction about 9,400 miles, of which 3,800 miles were in Asiatic Russia. It is conservatively estimated that, but for the war, the mileage of Russia's railways, including those of the new-formed border States, would have reached 65,000 by the end of 1921.

The formation of a series of independent border States growing out of the war has greatly reduced the mileage of Soviet Russia, because the greatest density of railway mileage was in these border States.

The equipment situation in Russia is worse than in any other country on earth. Out of a total of 19,106 locomotives in good condition before the war there were in August, 1921, only about 6,000 reported in working order, or a decrease of approximately 68 per cent. To-day about 1,000 of the remainder are idle owing to lack of fuel. Serviceable freight cars were reported to have decreased from 48 to 70 per cent of the pre-war number.

Roadbeds are stated to be in very bad condition; in fact, unless 25,000,000 ties are immediately laid, certain sections of Russia will have to be closed to traffic. Considerable mileage of branch lines has already been removed and used for repair material.

The railway systems in Russia are so inadequate, deteriorated, and mismanaged that it is not possible to make any comparison with the transportation systems of other countries.

Digitized by Google

GERMANY.

The total length of the German railways is approximately 36,000 miles, of which 69.5 per cent is double or multiple track. The loss of territories through the peace treaty led to a reduction of approximately 2,500 miles from the prewar mileage. The railroads are Government owned and operated. The latest figures available are for 1919, and they show that the total capital investment amounted to $5,333,000,000. Freight rates were increased since our entry into the war up to November 1, 1921, by 1,359 per cent over the prewar level. Regardless of the financial situation of the German railways and the tremendous increase in transportation expenses, together with the increase in freight costs, operating methods are rapidly improving, and the introduction of standard rolling stock of greater efficiency and the uses of the latest appliances for efficient locomotive performance, such as superheaters and feed-water heaters, are being undertaken.

NORWAY AND SWEDEN.

In Sweden the State operates 3,425 miles of line, which equals about one-half of the standard-gauge mileage and 38 per cent of the total mileage of that country. Eighty per cent of all the lines in Norway are operated by the State. In Sweden the freight rates are now from 100 to 200 per cent higher than in 1913. But it is expected that with the general decrease in the cost of materials and labor this level of freight charges will be adequate to meet the expenses for the coming year. The passenger rates in Sweden have been increased from 238 to 330 per cent. Similar increases in rates have taken place in Norway.

Information in this chapter was obtained through the courtesy of the Railway Age, and their European editor advises that the figures shown in dollars representing operating results of foreign lines were reached in the following manner:

England: $5 to the pound; 24 cents to the shilling.
France: 5 francs to $1.
Italy: 5 lire to $1; 2,204 pounds to 1 ton.
Switzerland: 5 francs equal to $1; 2,204 pounds to 1 ton.
Germany: 5 marks to $1.

The analysis of the English railway situation was obtained from the minister of transport of Great Britain; the French railway situation from an eminent French railway executive; the Italian from an Italian railway executive; the Switzerland situation from an English authority; the Russian from the professor of economics in the University of Moscow; the German from Mr. G. Reder of Berlin; the Norway and Sweden situation from the officers and secretaries of the Government-owned road.

It will be seen that the transportation systems throughout most of the world have been passing through a period of transition—a period of recovery from war conditions with no definite measure as to what the permanent level of rates or final readjustment will be. While the railway systems in the war areas of war devastation have been affected to a greater degree by the upheaval of economic conditions than the railroads of this country, all of our transportation

Digitized by Google

systems, steam lines, electric lines, water transportation, etc., are now in the melting pot of readjustment to a more normal basis of operation and service. At the height of the postwar period of transition Congress enacted the transportation act, a part of which is now embodied in the so-called interstate commerce act. Necessarily its provisions must be changed according to the new demands required by our economic development. This is not the time to make a general revision and reorganization of all the provisions of this act, but as the changed conditions in the country may warrant, changes in our transportation legislation should precede the need in the new relationship which is fast approaching between agriculture, transportation, and industry.

Digitized by Google

Chapter XII.

HISTORY OF RAILWAY TRANSPORTATION.

The progress of civilization from the dawn of history has been dependent upon transportation in greater degree than upon any other single factor or influence. Trading in the great basic commodities as we know them to-day was unknown in the early years of written history. The scattered tribes had little commercial intercourse one with the other and were of necessity dependent on the bounties of nature in their immediate environment, which was necessarily not far removed from the warmer sections of the world. If nature failed them in furnishing food, they must move to some more favored locality or starve.

With the desire on the part of some for a more permanent place of residence and the establishment of communities, the necessity for means of trading and exchange of commodities developed, but was much restricted until travel by water was introduced. This easy means of transportation rapidly extended the inhabited parts of the Eastern Hemisphere and was soon followed by an extensive interchange of commodities. The sea and navigable waterways were, however, the only avenues of commerce, and many years elapsed before these were supplemented by artificial routes in the form of canals.

It is hard to conceive in this present day how great nations grew and flourished under such restricted means of communication which must leave vast inland territories isolated or uninhabited. We have in some sections of the globe even at present practically such conditions, which are tolerable for their inhabitants merely because of their state of barbarism or lack of civilization and education. Their needs and wants are simple, as must have been those of our own ancestors under like conditions.

With the dissemination of knowledge, the desire for the society of neighboring tribes and their goods as the growth of the population spread in ever-increasing distances, the necessity for commerce and easy communication followed, but the interchange of the great basic commodities was still restricted to waterways, so that immense inland areas were prohibited from the free exchange of goods and products of the soil where long hauls were necessary to find markets. In the interior, distances were stated not in miles but in the number of hours required to walk from one place to another, and this mode of measuring distances is still followed in parts of Europe to-day where there is no railroad communication. All progress was comparatively slow until the introduction of steam, and the invention and development of the steam locomotive made possible the greatest progress of all time.

The improvement of the steam locomotive has, more than all other elements in railroad operation, made possible the phenomenal growth

Digitized by Google

and development in our inland transportation and brought about the efficiency and great success attained during the short period of 90 years of our history, and it may be said that it, more than any other factor, has in largest measure made possible the rapid strides of the United States as a great nation.

In 1827 the merchants of Baltimore procured the charter of the present Baltimore & Ohio Railroad. On the 4th of July, 1828, its construction was begun, the first act being performed by the venerable Charles Carroll, the only surviving signer of the Declaration of Independence. At the close of the ceremony of breaking ground, Mr. Carroll said: "I consider this among the most important acts of my life, second only to that of signing the Declaration of Independence, even if second to that."

The laying of rails within the city of Baltimore was not begun until the fall of 1829, and the first section of the 15 miles to Ellicott's mills was opened on May 22, 1830.

The rails were longitudinal sills, on which was placed a thin bar or strap of iron; and although some locomotives were in use in England and two or three had been imported into the United States, this road was, for nearly a year after it opened, operated by horsepower.

An unsuccessful attempt was made to propel trains by the use of sails. Recognizing that a more efficient power was needed than that of horses, the company invited proposals on the 4th of January, 1831, for the construction of a steam engine, specifying "which when in operation must not exceed 3½ tons in weight, and must on a level road be capable of drawing, day by day, 15 tons, inclusive of the weight of wagons, 15 miles per hour."

The first locomotive ever used in the United States was one imported from England in 1829. It was shipped by river and canal to Honesdale for use by the Delaware & Hudson Canal Co. It was named the "Stourbridge Lion" and made its trial trip on August 8, 1829, which was successful, but the locomotive was found to be too heavy for the track and its use abandoned.

The first locomotive ever built in America and the second in use was constructed at the West Point Foundry Works in New York in 1830. It was called the "Best Friend of Charleston," having been built for use on the South Carolina Railroad, then under construction; it reached Charleston in October and was placed on the road on November 2, 1830; the second engine constructed at the same works was also for this same road.

The third locomotive constructed in the United States was also the product of the same foundry works and was placed on the Mohawk & Hudson, now a part of the New York Central Railroad, in 1831. This locomotive weighed 3 tons and was placed on the road between two planes worked by stationary engines, one at Albany, 3,102 feet long, and one near Schenectady, 2,046 feet long. This locomotive replaced the Stourbridge Lion, of English make, which was found too heavy for the track.

The directors of the Baltimore & Ohio had become discouraged with various experiments for a motive power superior to horse power. Peter Cooper, of New York, had purchased a tract of 1,000 acres of land on the outskirts of Baltimore and concluded that his speculation would be a loss unless the railroad became a success,

Digitized by Google

whereupon he interested himself in the troubles of the directors of the railroad and proceeded to build the first American locomotive. It was not intended for actual service on the road but only as a working model and to demonstrate its ability to go around curves. The boiler was about the size of a wash boiler and the tubes were old musket barrels. When finished it was so insignificant in appearance that he named it the Tom Thumb.

On August 28, 1830, with 6 men on the engine, which was no larger than a hand car of to-day, and 36 men on a car attached, the trip to Ellicotts Mills was made, a distance of 15 miles, up an average grade of 18 feet to the mile, in 1 hour and 12 minutes, and the return trip in 57 minutes. In some places a speed of 18 miles per hour was attained.

In response to invitation for proposals to build a locomotive, with certain specifications as to weight and performance, published by the Baltimore & Ohio on January 4, 1831, three engines were offered to the company, but only one, that built by Phineas Davis, of York, Pa., was accepted as coming up to the required specifications. Although this engine was incapable of surmounting any considerable grades, it gave the company assurance that the use of steam power was practicable.

In 1832 Matthias W. Baldwin undertook to build a locomotive for the Philadelphia, Germantown & Norristown Railroad, which was opened for traffic on June 6, 1832, and owned "nine splendid cars," horses furnishing the motive power. These cars were old Concord stage coaches provided with flanged wheels to enable them to stay on the rails. Matthias W. Baldwin at the time was a watchmaker and did not dream that in accepting the order to build this locomotive he was laying the foundation for the great Baldwin Locomotive Works.

The locomotive, named Old Ironsides, was placed in service on November 23, 1832.

There were no brakes on either engine or cars and the only means of stopping was by reversing the engine. The locomotive weighed 7 tons, 2 tons more than prescribed in the contract, and because of this and its eccentricities in starting and stopping, the directors of the road were inclined to reject it, but finally compromised by accepting it at $3,500 instead of paying the agreed price of $4,000.

When the engineers, in laying out a railroad, came to a hill they could not go around, they laid a line of rail straight up the slope, called it an inclined plane and placed a stationary engine at the top to haul the cars up. They took it for granted that locomotives could only travel on level track, just as they had previously attempted to prove by scientific formula that the locomotive could not move its own weight, much less draw a load, because the wheels would revolve impotently on the rail or ground without moving forward at all.

In 1836, William Norris, of Philadelphia, a young locomotive builder and rival of Matthias W. Baldwin, built a locomotive which he named the Washington for use on the Philadelphia & Columbia Railroad. It had cylinders 10 by 18 inches and a single pair of drivers 48 inches in diameter; its boiler carried the heavy pressure of 90 pounds of steam and its weight was 14,400 pounds.

Digitized by Google

Upon trial on the inclined plane at Philadelphia, a grade of 369 feet to the mile, the Washington steadily puffed its way up to the top. No one was willing to believe the statement of a tale "so obvious in its fabrication," as it was well known that a locomotive simply could not negotiate an inclined plane simply by its own power. The following extracts from an article which appeared in the Railroad Journal of July 30, 1836, describes in part the results of a trial trip which was made at the request of the editor:

The engine started at the foot of the plane and on the plane. After proceeding a few feet the wheels were found to slip and the engine returned. It was said that the rails were found to have been oiled at this place, but a small quantity of sand was strewn on the spot and the engine proceeded. She regularly and steadily gained speed as she advanced to the very top, passing over the plane in 2 minutes and 24 seconds.

The enthusiasm of feeling manifested can not be described. So complete a triumph had never been obtained. The doubts that had been entertained by some and the fears of others were dispelled in an instant. The eager look that settled upon every one's face gave way to that of confident success, while all present expressed their gratification in loud and repeated cheers.

The length of the plane is 2,800 feet; the grade 369 feet to the mile, or 1 foot rise in 14.3 feet, which is a much steeper grade than the planes on the Mohawk & Hudson Railroad, those being 1 foot in 18, making an ascent of 196 feet in 2,800. The weight of the engine with water was 14,930 pounds; the load drawn up the plane, including the tender with coal and water, two passenger cars with 53 passengers, was 31,270 pounds; steam pressure, less than 80 pounds to the square inch; time of run, 2 minutes 24 seconds. It is to be remembered that the rails were wet with dew. As to the oil, it was afterwards mentioned that bets were made with the workmen to a considerable amount and those having been lost by the successful performance of the engine on a former day were quadrupled, and to save themselves it is not unlikely that this means was provided to accelerate the descent rather than the ascent of the engine.

The party again embarked after examining the workshops and proceeded to Paoli for breakfast and thence to Lancaster, the engine conveying at the same time a number of freight cars. The unfortunate location of this roads is very evident; frequent and short curves are introduced so uniformly that it would be supposed that such a location was to be preferred to a direct one.

We arrived at Lancaster and partook of an excellent dinner. After dinner the company were presented to Gov. Ritner, who was then in town. He afterwards accompanied the party some few miles from Lancaster, when he left us, much gratified with his rapid journey. We returned in an eight-wheeled car, a form that we much admired. The whole weight attached to the engine, tender, etc., included, must have been over 14 tons. The time of the run, exclusive of stoppage, from Lancaster to the head of the Schuykill inclined plane, was 8 hours 11 minutes, being a distance of 76 miles. This, it is to be remembered, was over a road having curvatures of less than 600 feet radius, up ascents of sometimes 45 feet to the mile. On level and straight portions of the road a velocity of 47 miles an hour was attained. As the trip had already been protracted this engine was obliged to leave on her return to Lancaster the same evening and we descended by the rope. We returned to the city about 8 o'clock in the evening, convinced of the success of our host, Mr. Norris, and having, in the language of one of our party, "lived six days in one."

Even after many demonstrations and actual daily performance in climbing of grades many people were still skeptical and in a communication to the Railroad Journal on March 11, 1837, this was described as "an account of deeds done in flagrant and open violation of the laws of gravitation. It was proven by elaborate algebraic formulæ that the Washington did not climb the hill, because it could not; and that no other locomotive ever could climb an ascending grade by its own power."

Long and earnest discussions in the columns of the Railroad Journal concerning the possibility or impossibility of an engine climb-

Digitized by Google

ing a hill continued, but as it was shown by daily demonstration that it could be done, the controversy finally died out.

While the locomotive was demonstrating its ability, and improvements in its construction were producing greater efficiency in its tractive power, improvements were also being made in other equipment. From the adaptation of the Concord stage coach, by the application of flanged wheels, gradually there were evolved cars especially adapted for railroads, and as early as 1836 passenger coaches along the lines of present equipment were built which had eight wheels.

The small commerce which Baltimore had enjoyed along the National Turnpike across the Alleghenies and on to Cincinnati was threatened on the opening of the Erie Canal in 1825, and means were sought to meet the competition of this easier route by the merchants of Baltimore, in part through the building of the Chesapeake & Ohio Canal, but it was soon determined that only the building of a railroad could successfully overcome the handicap. It was in this movement that the Baltimore & Ohio was conceived.

In 1833 the Baltimore & Ohio reached Harpers Ferry; in January, 1838, the Washington branch carried the first mail dispatched by railroad and by a contract signed with the Baltimore & Washington and the Philadelphia, Wilmington & Baltimore mails were carried between Washington and Philadelphia. This initiated the present system of carrying mails.

Cumberland, 198 miles from Baltimore, was reached in 1842, but construction to the Ohio River was delayed seven years because of inability to raise necessary funds. Other difficulties were met in the rough country traversed. When first built there were between Cumberland and Wheeling 11 tunnels of a total length of 11,156 feet and 113 bridges of a total length of 7,003 feet, including the Monongahela Viaduct 650 feet long, then the longest iron bridge in America. The last rail was finally laid December, 1852, and the first train ran into Wheeling January 1, 1853.

Regular train service between Baltimore and Wheeling was now established. This railroad, which less than 25 years before started with horsepower, now owned 139 locomotives, 96 passenger cars, and 2,567 freight cars. The first year after reaching Cumberland in 1843 there were 4,964 tons of coal shipped by rail. In 1850 the shipments of coal had reached 132,534 tons. In 1832 there were transported 352 tons of grain and in 1852 this traffic had grown to 5,000 tons. Wheeling, however, was not a satisfactory terminus, and on May 1, 1857, the Northwestern Virginia Railroad having been completed from Parkersburg to Grafton, one of the best constructed roads at the time, its 103 miles of railroad were taken over by the Baltimore & Ohio.

The simultaneous opening of this line from Baltimore to Parkersburg on the Ohio, the Marietta & Cincinnati from a point nearly opposite Parkersburg to Cincinnati, and of the Ohio & Mississippi from Cincinnati to St. Louis completed a through line by which a passenger could go from New York to St. Louis by changing cars not more than five times, making two short steamboat voyages, and two ferry trips.

The Marietta & Cincinnati had been organized in 1847. The Cincinnati & St. Louis was chartered in 1832, but the country between

Digitized by Google

was so new, so sparsely settled, and the people so poor that it was soon recognized to be an impractical project. The project was, however, revived 16 years later, and preliminary surveys begun in 1848. After many failures and discouragements the road was finally completed in 1857.

The final completion of this "through route" from New York to St. Louis was celebrated with a great national celebration, attended by a host of the celebrated men of the day.

A charter was granted the New York & Erie Railroad on April 24, 1832, but upon terms which provided that the entire capital of $10,000,000 must be subscribed and 5 per cent of the amount paid in before the company could incorporate. This the incorporators knew to be hopeless, and, against the opposition of the people in the section of the State traversed by the Erie Canal, were finally able to bring enough pressure upon the legislature to reduce the subscription requirements to $1,000,000, and finally the company was organized on August 9, 1833.

Donations of land for right of way and additional lands were asked, but no response came in the way of donations or subscriptions for stock. In desperation, a convention was held on November 20, 1833, in the city of New York to ask for State aid, but this was denied. The next year the company took what little money had been received for stock from the incorporators and started the survey.

The eastern end began in a marsh on the banks of the Hudson, 24 miles north of New York City. The western terminus was to be Dunkirk, a village of 400 inhabitants on the shores of Lake Erie. On November 7, 1835, ground was broken at Deposit, on the east bank of the Delaware River, but no progress was made. The great fire in New York on December 16, 1835, ruined many stockholders, and the panic of 1836–37 bankrupted many more. Another appeal was made to the State legislature for aid in the sum of $3,000,000. After bitter opposition, the credit of the State to the extent of $3,000,000 was loaned. Ultimately, the amount was given outright. February 14, 1839, a bill authorizing the surrender by the New York & Erie Railroad Co. of all its rights, titles, franchises, and property to the State was defeated in the senate by the narrow margin of only 1 vote.

In the spring of 1839 grading was begun, and on June 30, 1841, the first trainload of passengers was taken to Ramapo. Three months later the line was open to Goshen, 46 miles from Piermont. From this time forward progress was very slow, and it was December 27, 1848, more than seven years after reaching Goshen, that the first train entered Binghamton, 156 miles beyond. In these seven years the company met with a continuous succession of perplexities, annoyances, and vexations, aside from the almost insurmountable troubles of financing.

The road was completed to Corning on December 31, 1849, and there still remained a distance of 169 miles to reach Dunkirk. An issue of $3,500,000 of income bonds bearing 7 per cent interest and floated at a heavy discount, followed by a second issue of the same amount, furnished the necessary funds, and the road was finally completed in 1851. The driving of the last spike which completed the road which linked the ocean with the Great Lakes marked an epoch in the history of railroads and the first great trunk line was now

Digitized by Google

ready for traffic. The event was celebrated with the world's first long-distance railroad excursion. On Wednesday, May 14, 1851, the first through train carrying passengers from the ocean to the lake pulled out of Piermont at 8 a. m., followed 7 minutes later by a second section, and the party arrived at Elmira, 274 miles from New York, at 7 p. m., where the night was passed. At 6.30 a. m., May 15, the special train left Elmira and reached Dunkirk at 4.30 p. m. Thus opened the trunk line, an unbroken road 500 miles long.

In this same year an event of great historical interest occurred. It was discovered that the movement of trains could be controlled by telegraph. Although seven years had passed since Morse had sent his first message from Washington to Baltimore, people were still more or less incredulous of its practical utility, and until now no one had dreamed of using the telegraph to regulate the movement of trains. The first telegraphic train order was issued on September 22, 1851, by Superintendent Minot, but the engineer refused to be guided by such contrivance, as he was not ready to die that morning, whereupon the superintendent ran the engine himself.

When the Erie was at last in operation from Jersey City to Dunkirk it had cost $43,333 a mile, six times the estimate made in 1834, but it justified its construction as well as the reckless prophecy of President King of 1835, in which he said that such a road might make freight earnings of $200,000 a year eventually. In the first six months the freight revenue on through freight business after the line was opened to Dunkirk was $1,755,285. The opening of the Erie to Dunkirk and the completion of a through route from New York by way of Albany to Buffalo a few months later, by the opening of the Hudson River Railroad, completely revolutionized travel between the East and the West.

The opposition to railroad building in Pennsylvania was bitter and prolonged. The people seemed entirely content with the facilities afforded by pack trains, winding slowly and laboriously, single file, over the mountains between Philadelphia and Pittsburgh. When turnpikes were first proposed a vigorous protest was raised on the ground that packers and horse breeders would be ruined but at last this opposition was overcome and in 1786 a fortnightly stagecoach made the trips between Philadelphia and Pittsburgh and this was increased to a daily service by 1804. The interests which had brought this about were also strong enough to make powerful opposition when a few "radicals" proposed the building of canals as being superior to turnpike, but the clamor of opposition reached its climax when the "extremists" attempted to maintain that railroads would be superior even to canals. When, however, the opening of the Erie Canal had suddenly diverted Philadelphia's trade with the West to New York, the State undertook what private enterprise would not, by creating a board of canal commissioners to construct improved avenues of communication with the western parts of the State. It was agreed that canals were best but that owing to the mountainous character of the State, railroads might have to be built to fill in the gaps between and connect up the proposed canals, but the board was careful to make it plain that they favored railroads only as a last resort and that in their opinion the advocates of railroads overrated their commercial value.

Digitized by Google

The Philadelphia & Columbia Railroad, 82 miles long, was the eastern link in the chain of State works. It was begun in April, 1829. On April 16, 1834, the locomotive Black Hawk made the trip over the entire length of the road. The formal opening, however, did not take place until October 7, 1834, after completion of the double track. The rival companies operated trains to Philadelphia on that day, the Union Line and the People's Line, both pioneer "private car lines," the State owning the road. The original idea of a railroad in Pennsylvania being a sort of improved turnpike to be kept up by the State and upon which anyone who owned a car and could pay the tolls was free to come and go at his pleasure and convenience.

An act was passed authorizing the board of canal commissioners to purchase locomotives and under this authority the superintendent was instructed to purchase 20 for the spring trade of 1835. On November 7, 1834, the principal engineer reported the receipt of two locomotives which had been in use for some weeks, these being the Lancaster and the Columbia, both built by Baldwin. They were able to haul 48 gross tons or 30 tons of freight, and the running time for 77 miles was 8 hours. Under the same authority five English locomotives were purchased, but they could not pull their trains. They were forever breaking down, and were finally sold for scrap iron.

When locomotives were put in service there were several companies called transporters engaged in business on the road, each with its own cars, some handling freight, others passengers, but the farmer who had a load of potatoes to Philadelphia in his horse-drawn wagon was still free to come and go on the railroad, so long as he paid his toll, and the speed of all users of the road was regulated by the slowest car. Soon the board took the advanced step of prescribing hours when the locomotive might use the road, setting the hours from 4 to 10 a. m. and 5 to 8 p. m., between which the locomotive might leave the top of Belmont Plane, the last to leave in each period carrying the signal to indicate that fact. There was continual conflict between transporters who wished to use horses and the board, who wished to use steam and control the movements of trains. Finally, the board prohibited the use of horses on the railroad after April 1, 1844.

While the Philadelphia & Columbia was being built good progress was being made on the Allegheny Portage Road; one track was finished in November, 1833, and the second track completed in the spring of 1834, when the road was opened for traffic. In the building of this road there were laid out inclined planes with levels between them on which grades were not heavy enough to require hoisting engine and cable. The total length of the Portage Road was 36 miles, the summit being 1,398 feet above the eastern canal basin and 1,171 feet above the western. Cars were hauled up inclines by stationary engines with ropes 8 inches in diameter at the rate of 4 miles per hour. The ropes cost an average of $3,000 and lasted only about 16 months. Toward the last John A. Roebling induced the board to substitute wire cables. The road on the levels was laid with malleable-iron rails imported from Wales. Before the second track was finished the board, finding the use of horses wasteful, expensive, slow, and unsatisfactory, ordered two locomotives, but the use of horses by individual transporters continued until 1850.

Digitized by Google

The proposal to exclude private transporters from the Portage Road and operate it by the State met with vehement opposition, both from the public and the legislature. But conditions had become intolerable. The average load on the cars was 6,000 pounds, and the cost of moving freight over the road averaged 96 cents a ton. The limit of capacity was 576 cars one way in 24 hours. In the six months ended October 31, 1836, 19,171 passengers and 37,087 tons of freight passed over the road. In 1842 it required seven hours for a passenger to make this journey of 36 miles. With the Portage Road opened it was possible to make the journey from Philadelphia to Pittsburgh over State works, 118 miles by rail and 277 over canals, in 91 hours, or at an average rate of 4.34 miles per hour.

Another important link in the State system of railroads, and later to become a part of the Pennsylvania system, was the Cumberland Valley Railroad, which was formally opened from Harrisburg to Chambersburg November 16, 1837. After acrimonious contest between the canal and railroad interests in New Jersey, the board of directors of the New Jersey Railroad & Transportation Co. were able to announce on April 1, 1839, that they and the public were to be congratulated because of the opening of the line from Camden to Jersey City, by which it was possible to travel in great comfort from Philadelphia to New York in 6 hours, whereas the journey had theretofore required from 11 to 20 hours. The road was begun in 1831, and enough track had been laid to give an exhibition trip behind the John Bull locomotive on November 12, 1831. This locomotive was built in England and shipped from Liverpool on July 14, 1831. On April 17, 1893, the engine with train left New York under its own steam and made the trip to Chicago, where it was on exhibition during the World's Fair, and left on December 6, 1893, for the return trip, going over the Pennsylvania via Harrisburg and Baltimore to Washington. Having made its last trip under steam, it was returned to the United States National Museum to remain there permanently.

The De Witt Clinton and cars of the New York Central was another original which made the trip to Chicago in 1893, and this train was again placed on exhibition in Chicago in 1921.

The people of Pennsylvania were not satisfied with the performance of the State transportation system. Philadelphia, as well as other parts of the State, were falling behind in the race for the commerce of the West, and on December 10, 1845, a mass meeting was held in Philadelphia at which a memorial was prepared asking the legislature to charter a private railroad corporation to build a railroad system that would be up with the times. At this same time the Baltimore & Ohio wanted to build to Pittsburgh, and the people of the southern and western parts of the State were favorable to the project because they felt that the State board had treated them badly. The outcome was a charter for both roads, but the governor was authorized to give preference to the Pennsylvania Co. if it should have $1,000,000 in the treasury and 30 miles under construction by July 30, 1847, by annulling the charter of the Baltimore & Ohio. This Baltimore & Ohio charter was in fact later annulled.

The Pennsylvania Railroad Co. was organized March 31, 1847. Ground was broken at Harrisburg, its eastern terminus, on July 7,

Digitized by Google

1847, and connection was made with the Portage Railroad on November 1, 1850. Trains were run to Pittsburgh by the Philadelphia & Columbia Railroad and the Allegheny Portage Railroad December 10, 1852. A line through the mountains to cut off the Portage Road was not completed until February 2, 1854. Many difficulties were met; the individual transporters were still doing business on the State roads, which interfered greatly with the operations and business of the new roads. This difficulty was finally overcome by the purchase of the main line of the public works, for which the Pennsylvania Co. paid $7,500,000, possession being given by the State on August 7, 1857. The first through train from Philadelphia to Pittsburgh without transfer of passengers was run July 18, 1858. On this day smoking cars were first run on through trains and Woodruff's sleeping cars on the night trains. From this time forward the development of the Pennsylvania system progressed rapidly. Steel rails were first used by the Pennsylvania in 1863 and Bessemer steel rails in 1865. The air brake was adopted in 1866 and the signal block system in 1873.

The beginning of few enterprises are hailed with the acclaim and the wonder that fell to the honor of the De Witt Clinton and its train of coaches when it made its first trip from Albany to Schenectady on August 9, 1831. The passengers on their return home found themselves treated as heroes as they told their stories. The railroad fever became so prevalent throughout the Empire State that 60 days after the trip the Albany Argus contained notices of the intention to file applications for charters for railroad companies with an aggregate capital of twenty-two millions. The legislative meeting in January following the opening of the Mohawk & Hudson was confronted with 49 applications for railroad charters, and at the session of 1836 58 railroad charters were granted or renewed. Up to 1849 151 separate railroads had been chartered in New York. The first link in the system between Albany and Buffalo was the Mohawk & Hudson, 16 miles to Schenectady; the next, from Schenectady to Utica, 78 miles; and the next was the link from Syracuse to Utica, 53 miles.

The Syracuse & Utica Railroad was chartered May 11, 1836; the capital stock was $800,000, but within two weeks after the books were opened subscriptions totaled $2,500,000. The first train from Utica to Syracuse was run on June 27, 1839; the next link toward Buffalo was the Auburn & Syracuse. Surveys were begun in April, 1835, and construction in December of that year, but the panic of 1836 and 1837 delayed its completion. However, the road was finished and with wooden rails and horses for motive power was opened on January 8, 1838. The company soon raised sufficient money to buy the locomotive Syracuse, and having replaced the wooden rails with iron strap rails the first trip with the locomotive was made on June 4, 1839. This road enjoyed the unique distinction of having been conceded by the legislature the privilege of carrying freight. All the other early roads were restricted to the transportation of passengers, their baggage, and the mails.

The freight trains, however, were not imposing. The box cars had four wheels and 34 barrels of flour loaded one to the limit of its capacity. The switching was done with horses hauling the cars when loaded to the main line where they were coupled to the locomotive

Digitized by Google

and 14 such cars made a full train. Passenger cars ran on four wheels and were divided into three compartments, each compartment seating eight persons if not too large. There was not sufficient room to stand up straight. Other links were built in this line reaching westward toward Buffalo to Attica in 1842, and 31 miles from Attica to Buffalo were completed in December, 1842, so that at the beginning of 1843 there was a through rail route from Albany to Buffalo over which passengers could travel without change of cars more than six times, the trip requiring 30 hours. There were no through tickets and no baggage checks. The ride on each of the seven roads was a separate and complete transaction.

By 1850 the science of railroading had so far progressed that a passenger could buy a ticket from Albany to Buffalo for $9.75, but could get no reliable information as to the movements of trains. Theoretically, the express trains covered the distance in 14 hours. How nearly this schedule was observed is shown by the experience of those who left Albany at 7 o'clock Saturday evening in May, 1850, with the assurance that they would be taken through to Buffalo in 14 hours. The train arrived at Utica at 11.30 p. m. and was switched to a sidetrack; at 2 a. m. the train was taken on, arriving at Syracuse at 5 a. m. Here they were left without information as to the time of the next move. They were taken up again at 5.30 p. m. and arrived at Rochester at midnight, where they were left waiting 6 hours, and then finally taken on to Buffalo, where they arrived at the end of 38½ hours after leaving Albany, 290 miles east.

On May 26, 1846, the Hudson River Railroad was granted a charter. One month later the entire capital stock was subscribed. Work was promptly begun, and on October 1, 1851, the entire line was open for business.

In 1850 the alarming discovery was made that the railroads which had been intended for passenger traffic only were becoming formidable competitors of the Erie Canal. The whole Commonwealth was agitated, and there was strong sentiment in favor of legislation to prohibit any such competition, and as late as 1858 people were still holding meetings and resolving that the railroads had no right to compete with the canal. But the march of progress could not be delayed. The canals had to cut rates to meet the competition of the railroads and tolls were levied on railroad freight the same as on canals. Some of the roads in the chain from Albany to Buffalo were limited by their charters to the carrying of passengers, and they had a hard time getting permission to include the transportation of freight in their business.

The outcome of the agitation was the first important railroad consolidation. On May 17, 1853, 10 independent roads, including the 7 forming the route from Albany to Buffalo with their branches and feeders having a total of 542 miles of track, were consolidated under the title of the New York Central Railroad. The New York Central began business with 187 first-class passenger coaches, 55 second class, 65 baggage, mail, and express cars, and 1,702 freight cars. The road consisted of 298 miles of main line, 236 miles of branch line, and 29 miles of leased road. The average speed of the passenger trains had increased from averages of 12 to 15 miles an hour in 1840 to 25 miles an hour, express trains 40 miles an hour

Digitized by Google

and freight trains 14 miles an hour. Although the first-class passenger fare was only 2 cents a mile, as compared with 5 cents in 1840, the passenger earnings after the first year of operation subsequent to the consolidation were $3,151,514 and the freight earnings $2,479,820.

The section of the country lying west of the Allegheny Mountains although sparsely settled was as thoroughly agitated by its transportation problems as the section to the east of the mountains. The first line of railroad undertaken was the Mad River of Ohio. Its construction was begun in 1835 and a portion of it opened for traffic in 1838, in connection with the Little Miami, opened from Cincinnati to Springfield in 1846. It formed in 1848 a part of the first through line from Lake Erie to the Ohio River. A second line between the Lakes and the river was formed by the Little Miami and the Cleveland, Columbus & Cincinnati, opened in 1851. The Cleveland & Pittsburgh, forming a third line, was opened in 1852. Two great lines, extensions of these railroad systems of the east to Chicago—the Michigan Central and the Michigan Southern—were opened in 1852. These roads opened up the greater part of the State of Ohio to transportation by railroads and supplemented the trunk lines westward so soon as the intermediate lines could be put in; this was accomplished by the completion of the line from Buffalo to Toledo, the last link of which, between Cleveland and Toledo, was opened in 1853. This then gave through railroad service to Chicago.

The Legislature of Illinois appropriated $10,237,000 on February 27, 1837, to launch the internal-improvement schemes. This imposed a debt of $34.10 per capita upon the scanty population of poor, hard-working pioneers at a time when the State was already in debt and without sufficient revenues to meet current expenses. Chicago was then a village of 1,470 inhabitants and had to have a garrison to protect it from Indians. In 1838 the legislature appropriated $5,000,000 more. As a beginning 1,340 miles of railroad were to be constructed in the State and every river was to be made navigable. Every person who had a railroad scheme secured from $30,000 to $1,800,000, according to the amount of influence he could command.

Of the score of railroads planned none was carried far enough to permit of laying rails except the Northern Cross, which was to run from Quincy to the Indiana line. Ground was broken in August, 1837. Strap rails from the East were brought up the river to Meredosia in the spring of 1838 and track laying was begun May 9. On November 8, 1838, the first locomotive in Illinois hauled a select party the entire length of the line, 8 miles, and return. Construction east of Jacksonville was pushed throughout 1840 and 1841, and on February 15, 1842, the first train entered Springfield. Three round trips per week were made and the train was literally an accommodation train. The road was only 57 miles long, but could not be made to pay. After the locomotive ran off the track and was badly damaged mule power was used and freight only hauled when offered. The road was finally sold on April 26, 1847, and after being rebuilt, three locomotives purchased, and larger cars procured, it was again opened in the fall of 1849 and daily trains were operated between Springfield and the river, making the trip of 57 miles

Digitized by Google

in five hours. The road was extended to the Indiana line in 1855 and later became a part of the Wabash.

The Illinois Central was incorporated on January 18, 1836, to be built with State aid and under State supervision, but the company became insolvent and its affairs wound up, and on March 6, 1843, the Great Western Railway Co. was incorporated to build the Central road. This charter was repealed March 3, 1845, and renewed February 10, 1849, but still no actual progress was made. In December, 1849, Stephen A. Douglas introduced a bill for a land grant to aid in building a railroad from Chicago to Mobile. This became a law in January, 1850. The land was given to the State and the Great Western was induced to surrender its charter. An offer from eastern capitalists was submitted to the legislature on January 15, 1851, which offered to take the grant and build the road by July 4, 1854. An act incorporating the Illinois Central Railroad accordingly became a law on February 10. Never before had so vast a work as the construction of 700 miles of railroad been undertaken by one company, but the work was immediately undertaken and the main line, 301 miles, from Cairo to La Salle, was completed by January 8, 1855, the Galena branch from La Salle to Dunleith, 146 miles, was finished June 12, 1855, and the branch from Chicago to junction with the main line, 249, was completed on September 21, 1856.

The Mississippi River was first reached by the Chicago & Rock Island Railroad in 1854. The opening of this line was a matter of great importance, as up to that time the products of the west bank of that river, as well as the greater part of those grown on the east bank, were sent down to New Orleans. The Illinois River, navigable to within 100 miles of Chicago, gave the same direction to the products grown in the interior of the State of Illinois. Previous to 1854, only a very small proportion of the exports of the State was sent to market via the Lakes and Erie Canal. The extension of the Chicago & Rock Island to the Mississippi River was followed in 1855 by the Galena & Chicago and the Chicago & Alton, and in 1856 by the Chicago, Burlington & Quincy.

The Hannibal & St. Joseph, now a part of the Chicago, Burlington & Quincy, reached the Missouri River in 1859, and the Chicago & Northwestern reached the Missouri River at Council Bluffs in 1866.

The period of active railroad construction began in the West in 1851, and the growth, as shown in other parts of the report and by statistical tables, was phenomenal and beyond even the wildest dreams of the most visionary railroad enthusiasts of 20 years before.

Among the most remarkable achievements of railroad building the first road connecting the East with the Pacific States must always stand out in bold relief. Taking the circumstances into consideration, no railroad project so daring was ever before proposed.

Bearing in mind the small population and the poverty of the Nation, the half-developed state of the practice of railroad building and operation, and of the myriad other sciences upon which it depends, the immensity of the wilderness to be crossed, the distance from the base of supplies, the crudeness of transportation facilities, the number and implacable ferocity of the savage foes to be encountered, the building of the Union Pacific and the Central Pacific remain unparalleled in the annals of railroad construction.

Digitized by Google

Until the rails met on that fateful day at Promontory, the Union was incomplete. It was but a geographical dogma, a mere political theory which an attempt to materialize the proposed Pacific empire or other contingency might readily have changed. The driving of the last spike riveted the bonds that made the East and the West one grand whole, as surely as it held the rail in place. All the magnificent achievements of the past years have been possible to the great Nation then made a virile fact; whether they would have been possible otherwise may well be doubted.

Grading was first begun on the western end of the line on January 1, 1863, at Sacramento, Calif., but it was three years and eight months from that time when the rails reached Alta, only 70 miles toward the great goal; but in the next two months 23 miles were built to Cisco, and the altitude already reached was 2,286 feet. The road was already in the heart of the Sierras. By this time the Union Pacific, which was to build the east end of the line, stimulated by the example of the Central Pacific, was under way, and although the Union Pacific did nothing for 18 months after the Central Pacific had begun operations, by the time the Central Pacific was 93 miles from Sacramento the Union Pacific had extended its rails 247 miles westward. Ground was broken for the eastern end of the line on December 2, 1863, at Omaha.

By the beginning of 1867 the Union Pacific was operating to a point 305 miles west of Omaha. The completion of the Chicago & North Western to Omaha in December, 1866, opened a line of communication which greatly reduced the cost of supplies. In August, 1868, the road was 698 miles west of Omaha. Work was also progressing at the western end, but with great difficulties. To cross the Sierras 15 tunnels were driven. All the summer of 1867 the Central Pacific was pushed with a force of 10,000 men and 1,300 teams. By December 1 all of the tunnels were pierced and trains were running to Truckee, 140 miles east of Sacramento.

The spring of 1868 found the two companies on equal terms. While the Central Pacific had been crossing the Sierras, the Union Pacific had surmounted Evans Pass, the highest point on the line, at an elevation of 8,242 feet. Both had ample funds at last, and both were almost at an equal distance from Great Salt Lake, the Union Pacific 522 miles and the Central Pacific 545 miles. As soon as the weather permitted a construction campaign was begun which has never yet been equaled. From 20,000 to 25,000 men, and from 5,000 to 6,000 teams were employed, and from 100 to 600 tons of material were used daily. At one time the Central Pacific had no fewer than 30 vessels loaded with supplies at sea, on the long voyage of 19,000 miles from New York around the Horn to San Francisco. Twenty-five sawmills around Truckee worked up timber for the use of the Central Pacific, while a dozen mills in the Black Hills and the Rocky Mountains did similar work for the Union Pacific.

In 1867 the Union Pacific laid 240 miles of track; in 1868, 425 miles; and to May 10, 1869, when the tracks met, 125 miles. The Central Pacific laid 94 miles through the mountains in 1867, 363 miles in 1868, and to May 10, 1869, 186 miles.

Chicago's first railroad was the Galena & Chicago Union, now a part of the Chicago & North Western, which was chartered on Janu-

Digitized by Google

ary 16, 1836. The survey was begun on February 19, 1837, at the foot of Dearborn Street, and a line was run 10 miles due west to the Des Plaines River. The next year some piles were driven along Madison Street and some stringers were placed on them. But money was scarce and the project languished. An amended charter was obtained and the company was finally reorganized in 1847. The real survey was begun in September of that year and the route selected found to be 182 miles. The first 7 miles west of Chicago were put under contract in the fall of 1847 but actual grading was not begun until 1848. The first rails laid were the old strap-iron affairs, purchased from eastern roads who were taking them up and replacing them with the more modern T-rails, and hence were glad to sell them cheap, but even these second-hand strap rails cost $50 per ton on board the boat at Buffalo; however, they were purchased on credit to be paid for in two and one-half years.

On September 4, 1853, the road was opened for traffic to Freeport, 131 miles from Chicago. A telegraph line for operation of its trains was installed by the company in 1854.

The first locomotive, the "Pioneer," was also a second-hand bargain, bought of the Buffalo & Attica Railroad, which also was furnishing the strap rails. This locomotive was built by Matthias W. Baldwin and weighed 10 tons. It arrived in Chicago on the brig *Buffalo*, October 10, 1848. This was the first locomotive which ever ran west of Chicago, and after many years of service it was retired. It was exhibited at the Chicago Exposition in 1893, at the St. Louis Exposition in 1904, and now rests in the Field Museum.

Other transcontinental lines followed fast, notably the Atchison, Topeka & Santa Fe, the Great Northern, the Southern Pacific, the Northern Pacific, and many lines throughout our immense western territory, opening up vast areas theretofore considered uninhabitable or too far from transportation. Many of these met great hardships and many were disappointed for years because of the lack of sufficient traffic in the earlier days of their existence, but all have contributed toward the development of a great empire which without the railroads would still remain a wilderness to a very large extent.

Limitation of space precludes a complete historical review of the remarkable progress recorded in the expansion of our railroads from their inception, less than a century ago, to the present date; the foregoing brief recital is intended merely to indicate by the citation of some examples the history of their conception, the improvement in mode of building and operation, and the growth in the early part of their existence, as well as to demonstrate the influence of the railroads upon the development of our country, as without their aid the immense areas of our western country, the granaries of the world, would have remained inaccessible and unproductive, virgin fields would have been untouched by the plow, and the marvelous expansion of the country and the astounding industrial progress recorded during the last half century would have been impossible.

Acknowledgment is made here of the sources from which much of the material was gathered for this brief historical treatise, and credit is due to the excellent historical works, When Railroads Were New, by Charles Frederick Carter, and to Henry V. Poor's Sketch of the Rise and Progress of Internal Improvements.

Digitized by Google

EARLY FREIGHT TARIFFS.

[Extract from Bonnell's Freights, Etc., on Coal, New York, 1869.]

Distances and tolls on coal from Albany over New York State canals on net tons of 2,000 pounds, 2 mills per ton per mile.

ERIE CANAL.

Name of place.	Distance from Albany.	Tolls from Albany.	Name of place.	Distance from Albany.	Tolls from Albany.
	Miles.	*Cents.*		*Miles.*	*Cents.*
Albany	0	.....	Syracuse	116	33.2
West Troy	7	1.4	Camillas	175	35.0
Cohoes	11	2.2	Jordan	185	37.0
Schenectady	30	6.0	Weedsport	190	38.0
Fultonville	56	11.2	Montezuma	199	39.8
Canajoharie	68	13.6	Lyons	217	43.4
Fort Plain	71	14.2	Palmyra	232	45.4
Little Falls	87	17.4	Rochester	259	51.8
Mohawk	95	19.0	Brockport	279	55.8
Ilion	98	19.6	Albion	293	58.6
Utica	110	22.0	Medina	303	60.5
Whitesboro	114	22.3	Lockport	321	64.2
Rome	125	25.0	Tonawanda	340	68.0
Canastota	145	29.0	Lower Black Rock	348	69.6
Chittenango	151	30.2	Buffalo	352	70.2

OSWEGO CANAL.

Syracuse	166	33.5	Phœnix	183	36.5
Salina	168	33.2	Sweets Lock	186	37.2
Liverpool	177	34.2	Fulton	193	38.8
New Bridge	179	35.8	High Dam	202	40.4
Three River Point	181	36.2	Oswego	204	40.2

Freights on coal from Elizabethport and Port Johnston to points on the Erie Canal.

	Freight.	Distance (miles).	Tolls on 100 gross tons from Troy.
Albany [1]	$1.00	0	.....
Troy [1]	1.00	7	.....
Schenectady [1] (over tolls)	1.05	30	$5.15
Amsterdam [1]	1.05	46	8.73
Fultonville [1]	1.15	56	10.97
Utica [2] (over unloading and tolls)	1.20	110	23.07
Rome [2] (over unloading and tolls)	1.20	125	26.43
Syracuse [2] (over unloading and tolls)	1.35	166	35.61
Rochester [2] (over unloading and tolls)	1.37	250	56.44
Lockport [2] (over unloading and tolls)	1.62	321	70.33
Black Rock [2] (over unloading and tolls)	1.62	348	76.60
Buffalo [2] (over unloading and tolls)	1.62	352	77.28

[1] Captain pays his own towing, trimming, and unloading.
[2] Captain pays his own towing and trimming.

On 150-ton cargoes to Schenectady, Amsterdam, Fultonville, Utica, and Rome, 6 cents per ton less freight. From Newburgh and Rondout, 15 cents less; from Jersey City, 10 cents less. Freight to Montreal, Canada, say $3.25 and $2.50, gold.

Digitized by Google

Tolls on coal by the Central R. R. of New Jersey from Phillipsburg, in lots exceeding five 4-wheel cars.

To—		To—	
Springtown	$0.40	Flagtown	$1.45
Bloomsbury	.50	Ricefield	1.25
Valley	.60	Somerville	1.25
Ashbury	.70	Bound Brook	1.30
New Hampton	.75	Newmarket	1.35
Junction	.75	Plainfield	1.40
Spruce Run	.80	Scotch Plains	1.40
High Bridge	.90	Westfield	1.40
Clinton	.90	Cranford	1.40
Lebanon	1.00	Elizabeth	1.45
White House	1.05	Newark	1.39
North Branch	1.15	Elizabethport, for consumption	1.65
Raritan	1.25	Points east of Bay Branch	1.60
Flemington	1.45	Elizabethport, for shipping	1.22
Three Bridges	1.45	Port Johnson, for shipping	1.29
Neshanic	1.45		

Lumber tariff—Connecticut Valley & Springfield R. R.—Classification of freight, No. 3, taking effect Mar. 1, 1876.

Distance:	Rate per carload.
For not over 5 miles	$5.00
Over 5 miles and not over 10 miles	8.00
Over 10 miles and not over 15 miles	9.00
Over 15 miles and not over 20 miles	10.00
Over 20 miles and not over 25 miles	12.00
Over 25 miles and not over 30 miles	13.00
Over 30 miles and not over 35 miles	14.00
Over 35 miles and not over 40 miles	15.00
Over 40 miles and not over 50 miles	16.00
Over 50 miles and not over 60 miles	18.00
Over 60 miles and not over 70 miles	20.00
Over 70 miles and not over 80 miles	22.00

SPECIAL RULES.

1. The rates for lumber, as above, are for a carload not exceeding 10 gross tons actual weight. Excess weight over 10 gross tons per car will be charged at same rate per ton of 2,000 pounds.

Example:

1. Car lumber, 10 gross tons, 22,400 ..... $30.00
   Add for excess weight, 2,700, $3 ..... 4.05

2. Lumber in all cases must be weighed.

3. Shippers are required to furnish a certificate of the number of feet, board measure, describing the kind and general dimensions in each shipment.

4. Lumber must be loaded and properly staked by the shipper and unloaded by the consignee or owner.

5. Long lumber, requiring two or more cars for support, unless shipped with short lumber making full carloads, will be charged 40 per cent additional.

6. Lumber in quantities less than carloads will be billed at merchandise rates, not to exceed the price for full carload. Logs taken by special contract.

Digitized by Google

MINORITY VIEWS ON RECOMMENDATION 5, BY OGDEN L. MILLS.

I can not agree with recommendation 5 with reference to the St. Lawrence project. The commission has made no independent investigation of the matter, either directly or through its chairman or agents, nor have any hearings been held. The first time it was brought before the commission was some 10 days ago at one of the meetings called for the purpose of considering the tentative draft of the completed report on transportation. At that time one of the members moved that the present recommendation be embodied in the report on the ground that the commission was justified in accepting the conclusions of the so-called international commission.

This question is one of such magnitude and intricacy, the appropriations called for are so great, and the national interests involved are so many and so varied, that it seems improper to me for a committee or commission of Congress to definitely recommend action without investigation. Individual members of the commission may have sufficient knowledge of the facts to permit them to form a final judgment, but I have not, and I must, therefore, decline to join in making the recommendation referred to.

OGDEN L. MILLS.

Digitized by Google

MINORITY VIEWS ON RECOMMENDATION 5, BY PETER G. TEN EYCK.

Recommendation No. 5 was placed in the report by a majority of one by the Joint Commission of Agricultural Inquiry. It was embodied in the commission's report without holding hearings, without filing data, without a request of the commission to the chairman to secure information as regards this important subject, and without any information in the text to justify the recommendation, except a reference to the report of the International Joint Commission.

If this recommendation is carried through favorably, it will cost the Government of the United States many hundreds of millions of dollars to construct a waterway within the territory of the Dominion of Canada outside of the territory of the United States.

If this recommendation is acted upon favorably, it will mean that the Senate will ratify a treaty which will morally, if not legally, obligate the United States Government to an expenditure of millions of dollars, and to transfer an all-American waterway transportation system from the United States to Canada, and place it in competition with the Mississippi River, the Ohio River, and the barge canal, which are the present American outlets to the Great Lakes, without the House of Representatives having investigated or considered it.

If this recommendation is acted upon favorably the treaty will be agreed upon and entered into, binding the House of Representatives to an enormous appropriation, if not legally, morally to build a waterway within the territory of a foreign and competitive nation.

This recommendation was made by the Joint Commission of Agricultural Inquiry, which was appointed to consider agricultural problems and interrelated industries under Senate Concurrent Resolution No. 4, Sixty-seventh Congress.

This recommendation was adopted by the Joint Commission of Agricultural Inquiry with every member of the committee, except three, expressing themselves in the conference in opposition to embodying the recommendation in the report, stating that the recommendation is unnecessary and out of place in the report.

The following additional recommendation was offered by Mr. Ten Eyck when recommendation No. 5, was retained in the report. This was lost by a vote of nine to one.

The St. Lawrence River is a natural boundary line; the interests of the Government of the Dominion of Canada and of the Government of the United States are mutual in its utilization. It is suggested that the Government of the United States take such steps as are consistent and in accordance with international procedure with the Dominion of Canada and Great Britain to purchase all that territory in the Dominion of Canada lying east and south of the line comprising the center of the channel of the St. Lawrence River from its mouth to its source, including the full riparian rights and rights to develop and utilize half of the water power from the

Digitized by Google

St. Lawrence River, at the same time that it negotiates a treaty in accordance with the commission's recommendation No. 5, and it is suggested that the Secretary of State use his best endeavors to have the purchase price agreed upon credited on the British debt to the United States.

The Ten Eyck recommendation was offered with the purpose to invite the President of the United States, when negotiating a treaty with Canada, to negotiate with Canada and Great Britain as their interest may appear at the same time the purchase of any land that lies adjacent to and borders on the St. Lawrence River within the Dominion of Canada, which is obligatory for the United States Government to own so that she will receive all the benefits to which she is entitled, either legally, morally, or financially, as well as from a business point of view, before we obligate ourselves to pay any part of the cost of the project.

This amendment was recommended so that if a treaty is successfully negotiated with the Canadian Government the United States Government will own and control half of the land adjacent to the canal constructed in the St. Lawrence River, as well as half of the land which will be improved from the development of the water power in the St. Lawrence River.

Every country should have absolute jurisdiction over its transportation systems, and all transportation systems in any country should terminate in terminals located within the boundary and jurisdiction of that country.

One of the arguments of the proponents of this scheme is that a harbor on the St. Lawrence River is several hundred miles nearer Liverpool than the harbor of New York. Therefore, it is essential that the United States own the land bordering on the southeast bank of the St. Lawrence River throughout its entire length so that before the scheme has been made a reality we will own the necessary land to establish harbors within our own territory equally near to Liverpool.

We might just as well arrange to have the Boston & Albany, the Boston & Maine, the New York Central, the Pennsylvania, and the New York, New Haven & Hartford Railroads transfer their terminals to Canadian ports in the Dominion of Canada, so that they will be nearer to Liverpool, as to father a movement to transfer our water transportation system to the Dominion of Canada, so that its export harbors will be closer to England.

The land adjacent to a water power development has as much value as the water development itself, because it is the reservoir, the storage battery, and the transformer of the electrical energy developed.

It is where the people congregate to utilize the power development. It is where villages, cities, and large manufacturing industrial units are built up. It is where large manufacturing plants are erected to utilize and transform the electrical energy developed by the water power and transformed into commercial articles of commerce. It is where the total annual output is accumulated each year and stored in the form of large business and commercial centers, private homes, manufacturing plants, and industries of all kinds. It is where the annual total power output is stored and accumulated for all time in the future, like a storage battery, to be utilized at will.

Digitized by Google

Therefore, it is essential that we own half of the land, so that we may be a 50 per cent beneficiary for all time in the future, before we pay 50 per cent of the cost of its development.

If the Canadian Government intends to cooperate with the United States for the development of this costly enterprise, she will see the strength of this argument and show her sincerity of purpose by placing us in a position that we will not only be a 50 per cent cooperator in the construction of the enterprise but she will help us to become a 50 per cent beneficiary for all time in its utilization.

The reconstruction of the agricultural and commercial industries of the United States is of immediate necessity and paramount importance; cheap transportation is the greatest factor in accomplishing the full economic development of the agricultural industry and the proper development of the farm life of the country.

The farmers, having suffered mostly from the after-war deflation, are mostly in need of immediate relief by a scientific development of all of our internal problems, and especially the development of our internal and domestic waterways, which will best meet their necessity the quickest and help most to solve not only the transportation and marketing problems, but many of the other disadvantages under which he is laboring to-day.

The complete resuscitation of the agricultural life of the country will call for the expenditure of a large sum of money out of the Treasury of the United States as its prosperity is necessary to bring about the immediate and necessary relief to the financial, industrial, and commercial life of the entire country.

It is imperative that we make all internal improvements within the territory of the United States before any expenditures are considered without the territory of the United States, and that all money expended out of the Treasury of the United States for reconstruction purposes be expended where it can be of the greatest service to the greatest number, in the shortest time, and that all of our rivers and harbors, and small navigable streams be improved before any large project is considered so as to give to the people throughout the entire country direct and immediate relief.

The United States should improve its own harbors first so as to relieve present transportation conditions by improving the harbors of Portsmouth, Boston, New London, New Haven, Bridgeport, New York, Philadelphia, Trenton, Wilmington (Del.), Baltimore, Wilmington (N. C.), Charleston, Savannah, Jacksonville, Mobile, New Orleans, Galveston, Panama, Santiago, Los Angeles, San Francisco, Portland, Seattle, and all the other harbors within the Great Lakes, and immediately improve the inland waterways connecting the various harbors with the interior, to give to agriculture waterway transportation from the interior to the sea, such as the Connecticut River, the Hudson River, the Delaware River, the Susquehanna River, the Potomac River, the Ohio River, the Mississippi River, the Missouri River, the Warrior River, the Tombigbee River, the Arkansas River, the Red River, the Tennessee River, and such other rivers and tributaries that need improvement so as to give to the farmer proper and adequate inland waterway transportation rates; and immediately improve all the canals within the territory of the United States with the same object in view, and immediately take steps to continue and complete that great and

Digitized by Google

important intercoastal canal project connecting Boston with Galveston through Florida.

The cost of the development of the water power in the St. Lawrence River under present conditions when the country is in need of the money for the stabilization of its own commercial interests will not only deprive them of the money but if utilized to its full capacity it will further upset the economic conditions of business if the claims of the proponents are true that it will create the electrification of all the railroads within a thousand miles or more of the development, and which will cause the scrapping of all the steam engines, the steam plants, the cutting down of the production of the coal mines of the country; changing the source of power of the entire interrelated industries.

The total expenditure to change from steam to electric equipment and the scrapping of all steam-power plants will cost the people of the United States more than what it will cost to harness the St. Lawrence River. These changes must be brought about gradually with the idea of doing the least harm possible to the public.

We will admit the tragedy of freight congestion that war-time conditions created in the Western States, which instilled in the minds of the people in that locality an imaginary and visionary idea that the canalization of the St. Lawrence River is the "quack-medicine cure-all" which will relieve all of their ailments.

I take pleasure in presenting to you 68 reasons in opposition to the construction of this project.

1. The ocean liner can not compete with the Great Lakes boats of equal tonnage, due to the fact that the ocean liner will cost more to build than the Great Lakes boats of equal tonnage.

2. A 10,000-ton vessel on the Atlantic Ocean requires 50 men to man it, while a 10,000-ton boat on the Great Lakes is manned by 30 men.

3. The insurance on the ocean-going vessel, on account of the original cost and extra hazard of the ocean-going boat traveling the St. Lawrence River and Great Lakes, will be materially higher.

4. The rate on coal from Buffalo to Duluth, a distance of 1,000 miles, is 50 cents per ton on a lake carrier. The rate on coal from Norfolk to Boston, a distance of 500 miles, is $1.10 to $1.25 per ton on an ocean liner.

5. An ocean-going steamer which is designed to navigate the seas in all weather can not operate on the Great Lakes with the same safety as a Great Lakes boat, due to its construction, design, and depth of draft, nor can it carry a full cargo on inland waterways for the same and other reasons. Likewise, a Great Lakes boat of equal tonnage can not travel the Atlantic Ocean with safety in all weather on account of its construction, design, and draft. We admit that both of these designs of vessels can navigate in either place under the most favorable conditions if the channels are deep enough to accommodate the draft of the vessel, but not with safety in stormy or foggy weather, due to the difference of the condition under which they sail and their design.

6. The Board of Rivers and Harbors state that the total tonnage of the Great Lakes during the year 1920 was 197,502,000 short tons.

Digitized by Google

The amount of the tonnage exported from the Great Lakes was 9,065,497 short tons, approximately 4½ per cent.

The deduction from which makes it apparent that most of the tonnage on the Great Lakes is used domestically for manufacturing purposes and for domestic consumption.

From statistics gathered by the Department of Commerce the total production of grain in the United States, in bushels, for the year 1920 is as follows: Corn, 3,232,367,000; wheat, 787,128,000; barley, 222,024,000; rye, 69,318,000; oats, 1,526,055,000; grand total, 5,816,892,000 bushels. Equal in weight to 144,826,376 short tons. There were exported from all ports in the United States 323,851,345 bushels, as per table below, equal in weight to 9,264,458 short tons. The total short tons of all grains exported from all the ports of the United States, including the breadstuffs, wheat flour, corn meal, rye flour, barley flour, oatmeal, and 392,612,555 pounds of rice, total 24,099,113 short tons, exported during 1920.

Wheat, rye, barley, corn, and oats exported from all parts of the United States, by customs districts.

	Wheat.	Rye.	Barley.	Corn.	Oats.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Maine and New Hampshire	1,583,527	1,571,787	124,042	947,258	1,276
Maryland	27,798,338	19,679,665	735,758	1,623,402	1,884,718
Massachusetts	4,174,554	333,759	45,112	58,854	86,819
New York	36,148,343	23,488,700	4,947,659	1,653,372	7,884,700
Philadelphia	17,684,343	2,780,992	232,538	700,665	126,166
Virginia	2,153,278	311,487	150,414	109,466	89,885
Galveston	46,561,406	496,713	625,055	82,229	1,500
New Orleans	48,695,964	177,857	5,949,073	1,142,998	907,068
Sabine	1,772,010	.....	2,658	.....	.....
Oregon	12,289,790	.....	.....	.....	21,221
Washington	3,519,766	.....	.....	223,327	30,716
Buffalo	488,058	61,000	.....	62,817	1,179
Chicago	7,278,767	525,142	.....	648,749	.....
Duluth and Superior	7,405,888	7,684,589	.....	357,128	234
San Francisco	5,715	.....	4,611,083	2,160	48,833
Michigan	260,642	345,096	106,368	7,719,044	1,342,423
Other	467,045	113,703	324,467	2,429,951	452,136
Total	218,287,334	57,070,490	17,854,227	17,761,420	12,877,874

Grand total, 323,851,345 bushels.

7. The Board of Engineers for Rivers and Harbors states that the total of all vegetable food products of the United States carried on the Great Lakes in 1920 amounted to 5,499,026 short tons, and Canada's total tonnage for the same products amounted to 2,284,582 short tons.

The Board of Army Engineers for Rivers and Harbors states that the total tonnage of all grains of the United States carried on the Great Lakes in 1920 totaled 4,794,122 short tons, of which 2,999,654 short tons were exported, which is the total amount of grain that would pass through the St. Lawrence Canal, provided all the export grain on the Great Lakes was transferred from American routing to a routing via St. Lawrence through Montreal in Canada. Therefore the amount of service that the St. Lawrence River will render to the country on shipment of farm products, even though it meets all the expectations of its advocates, is infinitesimal when compared with our gross tonnage or even to the total export tonnage of farm products.

Digitized by Google

The barge canal wholly within the territory of the United States can accommodate seven times this tonnage annually.

The total value of all farm products for 1920, according to estimates of the Department of Agriculture, and according to calculations of the Department of Agriculture 43 per cent of the value of the total exports in 1920 consisted of farm products. If this percentage is applied to the total tonnage as given in the preceding paragraph, the tonnage of all farm products would be approximately 27,435,000 short tons.

8. The Board of Rivers and Harbors state that the total tonnage of all commodities exported from all ports in the United States in 1920 was approximately 63,803,433 short tons. Total tonnage of all farm products exported approximates 27,435,000 short tons.

9. If the people in the great Middle West located at shipping points similar to the shippers in the Kansas City region wish water transportation to the sea, I suggest that we improve the Missouri River, the Mississippi River, the Ohio River, and furnish the necessary boats to give them an all-American waterway route to the sea the same as Kansas City enjoys to-day via the Mississippi River, and not require them, as is their desire at the present time, to make more than a 200-mile railway haul from Kansas City to the Great Lakes so that they may utilize an artificial waterway route through a foreign territory that will, I predict, eventually cost the United States more than one-half a billion dollars to build, which when completed will entail a big annual expenditure to operate and maintain.

10. The people in the Great Lakes cry for a cheaper water route for 5 per cent of their business and forget the 95 per cent consumed by the people of their own country. They are like the merchant that manufactures a general utility article in a city of 1,000,000 inhabitants and sends all his salesmen to the rural and sparsely populated districts hundreds of miles distant to sell a small percentage of his output and neglects his local million-peopled market.

11. The St. Lawrence Ship Canal will not serve or cheapen the freight rates on food products to the consuming public of the United States. If the Federal Government decides to expend this vast amount of money in waterways we should expend it in such a way that it will give at least our own people equal benefits with the people of all foreign countries.

12. It is an absolute necessity that a country control its transportation system to insure commercial success.

13. All the transportation systems of any country should terminate at terminals and harbors wholly within its territory, both in peace times and in war times.

14. More than 75 per cent of the people of the world are closer to the ports of Boston, New York, Philadelphia, Baltimore, and all other ports within the territory of the United States, than to the port of Montreal.

15. More than 75 per cent of the population of the world has a shorter waterway transportation route connection with the Great Lakes through the port of New York via the barge canal than through the port of Montreal via the St. Lawrence River.

16. The argument that the port of New York, due to its congestion, is a sufficient reason for the construction of a deep waterway canal in the St. Lawrence River to make Montreal the principal export city of North America is obsolete. This has been answered in a

Digitized by Google

practical way by the States of New York and New Jersey in their approved plan in making the port a national harbor and increasing its facilities and capacity tenfold by their cooperation in the expenditure of many millions of dollars.

The population within the port harbor district is more than the entire population of Canada. The railroads and other transportation facilities entering this harbor outclass those in importance entering any other terminal in the world. These feeders, outside of the natural advantages of the harbor, are absolutely necessary for an economical and successful export center. They assure to ocean-going liners a full cargo each way. New York port being open throughout the entire year, assures shippers a continuous waterway service throughout the entire year.

17. On account of the shortness of the navigable season in Canada, the shippers can only use the canal approximately six months in the year, which will make it necessary that the ocean liners will have to look elsewhere for business for the other six months of the year.

18. The St. Lawrence having only a normal six-months' season, it will increase the cost of navigating ocean liners between the Gulf of St. Lawrence and the Great Lakes to such an extent that it will make the use of transatlantic vessels prohibitive.

19. The building of the St. Lawrence Ship Canal will give Great Britain access to the Great Lakes with her warships, as well as with vessels of commerce, through her territory, while all of our vessels will first have to pass through English or Canadian territory.

20. In case of war between Great Britain and any other country which is on friendly terms with the United States, the United States will be prohibited from sending any of her food products to them through this canal.

21. The cost of shipping grain to New York City from Duluth via the Great Lakes, barge canal, and Hudson River is 7½ cents, including the elevator charges and five days' storage at Buffalo, made up as follows: 1½ cents per bushel from Duluth to Buffalo; 6 cents from Buffalo to New York, including elevator charges and five days' storage at Buffalo and 1 cent transfer charges at New York City, including five additional days' storage.

See telegrams quoting rates:

NEW YORK, N. Y., *January 25, 1922.*

Hon. PETER G. TEN EYCK,
House of Representatives, Washington, D. C.:

Canal rate wheat, Buffalo, New York, slightly fluctuating season 1921. Minimum, including elevator charges, at Buffalo, 6 cents per bushel; maximum, 8 cents per bushel; additional elevation charge here boat to steamship, 1 cent per bushel.

E. S. WALSH.

BUFFALO, N. Y., *January 25, 1922.*

Congressman PETER G. TEN EYCK,
House of Representatives, Washington, D. C.:

Answering telegram, cost of transferring grain from Lake boats to cars or canal boats, 1 cent per bushel, including five days' storage in elevator.

ADAM E. CORNELIUS.

Digitized by Google

INTERNATIONAL ELEVATING CO.,
New York, December 20, 1921.

The following charges will be in effect January 1, 1922:

Charges to be paid by the grain: Receiving, weighing, and discharging, seven-eighths cent per bushel; transportation of elevator, one-eighth cent per bushel; boat trimming, $1.50 per 1,000 bushels; mixing, one-fourth cent per bushel; blowing and screening or dusting, one-fourth cent per bushel; on all hot and salvage grain additional trimming charge $3.50 per 1,000 bushels; on any parcel less than a towing lot of 4,000 bushels or any parcel or cargo on which the owners order bagging in excess of amount of bagging required by underwriters' rules, transportation of elevator shall be one-half cent per bushel.

Charges for delivery to be paid by the steamer: Trimming, $3 per 1,000 bushels; trimming decks 30 feet or over, $4.50 per 1,000 bushels; waiting time for grain trimmers (longshoremen), $1 per hour per man.

From reliable authority grain can be carried from Atlantic ports in lots of ten to twenty thousand tons, as a part cargo of ocean liners, cheaper than a tramp or a liner will carry a full cargo. The cost of shipping grain from New York to Liverpool is approximately 9.6 cents per bushel. See following letters:

NEW YORK, *February 15, 1922.*

Hon. PETER G. TEN EYCK,
House of Representatives, Washington, D. C.

SIR: We have your favor of the 9th instant, relative to quotation on a full cargo or parcel lot of grain from New York to Liverpool, England.

Please be advised that the present quotation on parcel lots; that is, on about 10,000 bushels of either corn, wheat, or rye, is 3 shillings 9 pence per quarter, which is 480 pounds, while the full cargo rate is 4 shillings per quarter.

We are in a position to book for February or March shipment at the above rates on parcel lots, and charter a full cargo of corn, wheat, or rye for March shipment at 4 shillings. We are not in a position to quote you on oats.

For your information, the rate depends at times on the supply and demand, and does not very much depend on the season of the year. For instance, in January wheat, corn, and rye was quoted at 3 shillings per quarter for shipment in February.

We trust this information will be of service to you, and remain,

Yours very truly,

C. B. RICHARD & CO.
F. J. NADO, *Forwarding Department.*

INTERNATIONAL MERCANTILE MARINE CO.,
New York, February 10, 1922

Mr. PETER G. TEN EYCK,
House of Representatives, Washington, D. C.

DEAR SIR: We have your letter of the 8th instant.

There are no tariff rates to United Kingdom ports for bulk grain. This is an open market and supply and demand govern. The regular liners nearly all require a quantity of grain for stability.

At the present time the amount of space available in these steamers exceeds the supply of grain. The result is that the current rate is less than that at which tramp steamers can be profitably operated with full cargoes of grain. The present rate at which wheat, corn, and rye are being booked from New York to Liverpool is 3 shillings 6 pence per quarter, which at the current rate of exchange is equal to about 15¾ cents per 100 pounds.

We believe there are one or two tramp steamers offering for full cargoes on which the owners intimated they would trade at 4 shillings 6 pence per quarter, which is equal to approximately 20¼ cents per 100 pounds.

For the freight department.

F. A. RYAN, *Manager.*

Digitized by Google

SUBMARINE BOAT CORPORATION,
Newark, N. J., February 15, 1922.

Hon. PETER G. TEN EYCK,
Washington, D. C.

MY DEAR CONGRESSMAN: In response to your letter under date of February 11, I desire to inform you that we intend to operate on the barge canal, during the 1922 season, 30 barges aggregating 12,240 dead-weight carrying capacity, with three new tugs especially adapted for service on the canal. This constitutes an addition of 60 per cent to the tonnage capacity of the fleet we had in operation last season, and, of course, the addition of the modern tugs mentioned.

With respect to the other information, I regret that I do not have it available; but I shall try to get it for you as soon as possible.

Cordially yours,

HENRY MOSROWIK.

LUNHAM & MOORE,
New York, February 10, 1922.

Hon. PETER G. TEN EYCK,
Washington, D. C.

DEAR SIR: In reply to your favor of yesterday's date, beg to state the present rate on heavy grain from New York to Liverpool is 3 shillings 6 pence per 480 pounds (a quarter, of 8 bushels), at which we closed 32,000 bushels for one of our customers on a White Star steamer to March 4 and March 11.

Full cargo rates are at present higher than berth rates to the United Kingdom, the present price asked from Atlantic ports being 4 shillings 6 pence per quarter, although believe could obtain boats on bids at 4 shillings 3 pence. Cargo rates to United Kingdom have been ruling higher than berth for the past few months, owners seemingly preferring business to the Continent (evidently because expenses discharging much cheaper). Cargo rates to Continent to-day for March, 16 cents per 100 pounds, while berth rates are 17 to 18 cents per 100 pounds, owing scarcity of berth room for near-by shipment.

So you will see how the situation differs. United Kingdom berth far below cargoes and Continent berth higher than cargoes.

Seasons have no bearing on rates, except perhaps on eve of new crop movement rates firm up owing to demand.

Rates are controlled entirely on basis of supply and demand, world's markets having distinct bearing. When they can buy cheaper in other parts of the world, we suffer accordingly.

The ocean freight market is a large subject, difficult to convey in a letter. If you are ever down this way and want to talk about it, will be glad to give you several earfulls.

Very respectfully yours,

WALTER MOORE.

P. S.—Just noticed your letter referred to oats. There has been no oats business doing. The usual difference on cargoes is, if heavy grain rate is 4 shillings per 480 pounds, oats would be 3 shillings per 320 pounds, that is, 1 shilling less, but per 320 pounds instead of 480 pounds.

The berth parcel rate has been 3 shillings per 320 pounds, while heavy rate was 3 shillings 3 pence to 3 shillings 6 pence per 480 pounds, the 3-shilling oats rate being an arbitrary minimum and a higher basis than it should be by comparison.

CUNARD STEAMSHIP CO. (LTD.),
New York, February 16, 1922.

PETER G. TEN EYCK, Esq.,
House of Representatives, Washington, D. C.

DEAR SIR: We are in receipt of your communication of February 9 in regard to request concerning particulars on shipments of wheat, corn, or oats from New York to Liverpool.

For your information full cargoes of grain have recently been closed from North Atlantic and Canadian ports to United Kingdom ports on the basis of 4 shillings per quarter, and the liners are accepting 3 shillings 6 pence to 4 shillings at the present time. The average rate works out about 3 shillings 9 pence per quarter.

The liners are able to accept a little lower rate than the full-cargo steamers on account of the fact that they only take parcel lots—say on an average of 10 loads per

Digitized by Google

steamer, which is the equivalent of 3,140 tons weight. Loads of this nature serve as ballast for the liners and are a great advantage to them in the dispatch of their steamers.

In the case of full-cargo steamers they can hardly operate on less than 4 shillings per quarter, as they have no other cargo on which to obtain revenue, whereas in the case of liners, they take general cargo, which is much better paying freight.

Grain can be loaded at the rate of about 200 tons per hour per hatch and can be discharged as quickly.

At this time last year the rates on grain were practically double what they are to-day, and shipments are going forward from the Gulf at rates a little higher than those prevailing on the North Atlantic—say 6 pence to 1 shilling per quarter additional.

The equivalent of 3 shillings 6 pence per quarter is 77 cents per 480 pounds, which is the equivalent of about 16 cents per 100 pounds, and no doubt you will agree that this is a very low rate of freight considering the operating expenses of steamers to-day.

One load of wheat equals 8,000 bushels, 60 pounds per bushel; 480 pounds per quarter equals 214 tons weight of 2,240 pounds.

One load of corn equals 8,571 bushels, 56 pounds per bushel; 480 pounds per quarter equals 214 tons weight of 2,240 pounds.

One load of oats equals 10,000 bushels, 32 pounds per bushel; 320 pounds per quarter equals 143 tons weight of 2,240 pounds.

We hope the foregoing covers the point you have in mind, but if not it will be more than our pleasure to give you such additional information as you may request.

Yours faithfully,

CUNARD STEAMSHIP CO. (LTD.),
JOHN GAMMIE, *General Freight Manager.*

22. The same rates are charged on wheat from Montreal to Liverpool as from New York to Liverpool. The rate of insurance, however, amounts to about 1½ cents per bushel more from Montreal to Liverpool than from New York to Liverpool, which makes an additional cost of 1½ cents from Montreal. During certain seasons of the year insurance companies refuse to accept any insurance risks on shipments via the St. Lawrence route from Montreal.

23. Paragraphs 20, 21, and 22 show conclusively that it will be impossible to save even 5 cents per bushel on export grain through the St. Lawrence Canal, while we are promised by the shippers on the barge canal that they will lower their present rates at least 3 cents per bushel as soon as they can get enough of the proper type of boats on the canal.

24. The interest alone on $500,000,000 at 5 per cent equals an amount large enough to give a 5-cent subsidy on 500,000,000 bushels of grain, which is more than the total export from all our Atlantic ports in the United States.

25. If it is a cheaper rate that is needed, let the United States give the shippers a freight allowance equal to the interest on the investment in the St. Lawrence Canal, and thereby run no risk of failure with so large an experiment, which will cost us so much in taxes.

26. Using Buffalo as the all-American outlet from the Great Lakes to the Atlantic Ocean, the following distances to Liverpool are interesting and self-explanatory:

	Nautical miles.	Statute miles.
Buffalo to Montreal	339	390
Buffalo to New York	440	507
Montreal to Liverpool, via Bella Isle	2,785	3,207
Montreal to Liverpool, via south of Newfoundland	2,926	3,369
New York to Liverpool	3,107	3,578
Montreal to Belle Isle	873	1,005

Digitized by Google

From the above it is apparent that Montreal is from 200 to 300 miles nearer Liverpool than New York City; but for an ocean liner to take advantage of this shorter route she will have to traverse 873 nautical miles, or 1,005 statute miles, from Belle Isle to Montreal, through a narrow and dangerous channel throughout the entire length of the St. Lawrence River, while the distance between New York Harbor and Liverpool is an open waterway throughout its entire length. (See 68 regarding statistical hazardous navigation.)

27. In the building of the Panama Canal we did not require financial assistance from other nations, nor did we build it without first obtaining the territory through which it runs; but, on the other hand, it being an international route, to-day certain nations—especially Great Britain—are trying to dictate to us as regards its operation, protection, and tolls. This being true, how much more would Great Britain endeavor to dictate to us if it laid within her territory, as this project will, and being of international concern, we will have again invested American money in an enterprise the policy of which will be controlled to a certain extent by foreign nations.

28. The policy of the public-service commissions and the Interstate Commerce Commission is to oppose the building of a parallel transportation route until the existing route has proven itself inadequate to take care of the traffic for which it was constructed.

29. The New York Barge Canal was not completed until after the war had started. The Federal Government later took it over under its control when it took over the railroads. That and the war stifled all private capital from building boats and warehouses and investing generally in transportation facilities or engaging in waterway transportation business. Not until the spring of 1921 did the Federal Government release its jurisdiction, as well as its boats, and turn back the canal to the State of New York, after which a number of private individuals and corporations placed boats upon the canal which carried in 1921, its first year of operation, more than a million tons of freight, which is more than one-third of the tonnage of all the grain exported from the Great Lakes.

30. In 1921 a cargo of 80,000 bushels of oats was carried from Duluth, through the Great Lakes, and through the Barge Canal to New York City via the Hudson River without breaking bulk at the city of Buffalo, and loaded it on ocean-going steamers in the harbor of New York, showing conclusively that the Barge Canal is large enough to handle lake-going steamers, if that class of business is profitable.

31. Mr. Hugh L. Cooper, of the firm of Hugh L. Cooper & Co., engineers of national reputation, after a thorough physical study on the ground and compilation of costs of the construction of a canal and development of the water power in the St. Lawrence River, stated in a speech in Chicago, April, 1922, that the total cost of constructing the canal and developing all the water power in the St. Lawrence, including interest on money invested during the construction, the adjustment of claims, all other liabilities, and other incidental expenditures pertaining to the work, would amount to $1,250,000,000, exclusive of any work of deepening the channels or improving the harbors and docks in the Great Lakes to accommodate vessels of a deeper draft.

Digitized by Google

32. In 1912 we had a budget of one billion, to-day due to the war we have a budget of four billions; therefore, we should only spend that which will give us greatest immediate relief.

33. This money which we are considering to expend abroad could be used to better advantage to equip our own waterways with boats, warehouses, grain elevators, terminal facilities, etc., so as to reduce the freight rate to a minimum to the public.

34. When we need so much money for internal improvements, farm credits, transportation, warehouses, good roads, improved highways, extension of our own inland waterways, improvements in our harbors and docks, and an adequate appropriation by Congress to take proper care of our ex-service men, it is ridiculous for the people of the United States to spend $500,000,000 to help an adjoining country to build a paralleling and competitive route in territory without the United States to compete with an existing all-American route within the territory of the United States.

35. Our policy should be American money for American waterways within the territory of the United States.

36. If Great Britain controls, through Canada, the export harbor, and Liverpool the import harbor, as well as the boats in which our grain and farm products are shipped, she will also control the price; and she being a consuming nation, her control of the price will be downward, and the farmers will lose more in the selling price of their commodities than they can possibly gain if all the promises be true of the reductions in the transportation rates.

37. What the farmers need to-day is immediate relief by being supplied with the necessary water, rail, and highway transportation facilities at reasonable rates.

38. This foreign canal which some are in favor of building in the Dominion of Canada can not be constructed, properly equipped with terminals, boats, and other equipment within 10 years' time, and what the farmer needs to-day is immediate relief.

39. Before we consider the 50–50 improvement of the St. Lawrence River, we should at least own all that land between the present boundary of the United States and the center of the St. Lawrence River reaching from its source to its mouth and south of the Gulf of St. Lawrence which is now part of the Dominion of Canada.

40. Whenever a water power is developed the land contiguous and adjacent thereto improves in importance and value because the land bordering upon a waterway development is the storage battery, the reservoir, and transformer for the developed horsepower. It is where the people congregate, create villages and cities, build manufacturing plants and industries to utilize the electric power, transforming the electric energy into articles of commerce and the necessities of life which the people of the world purchase. It is where the developed electric power will be accumulated and stored for hundreds of years in the future in the form of large populated manufacturing districts. Therefore it is important and essential that we at least own the land bordering on one side of the St. Lawrence River and the right to develop and utilize one-half of the horsepower available at any and all places throughout its entire length if we are required to pay for half the cost of its development

41. Mr. Ten Eyck introduced the following resolution (H. Res. 287) February 14, 1922, which speaks for itself. If the President of

Digitized by Google

the United States accomplishes its purpose, he will have at least made the United States corecipient as to the water power developed.

Whereas the St. Lawrence River is a natural boundary line, and the interests of the Governments of the Dominion of Canada and of the United States are mutual in its utilization: Therefore be it

Resolved, That the President is requested to take such steps as are consistent and in accordance with international procedure with the Dominion of Canada and Great Britain to purchase all that territory in the Dominion of Canada lying east and south of the line comprising the center of the channel of the St. Lawrence River from its mouth to its source and the center of the Gulf of St. Lawrence, including the full riparian rights and rights to develop and utilize half of the water power from the St. Lawrence River; and

Resolved further, That the President is requested to use his best endeavors to have payments due the United States on the British debt credited on the purchase price of the territory so acquired.

42. The reason that the people who live within the Great Lakes watershed and the Northwest are demanding a waterway outlet to the sea via the St. Lawrence River through the Dominion of Canada is due to the fact that the railroads were congested during the war and that the present railroad rates were caused by the war. The congestion has ceased to be a factor. In addition to this we have the New York State Barge Canal with a carrying capacity of between twenty and twenty-five million tons annually, has since been put into operation and thrown wide open to the commerce of the world free of tolls as the taxpayers of the State of New York pay for its upkeep, maintenance, and operation. This canal connecting the Great Lakes and the Atlantic Ocean parallels the proposed St. Lawrence canalization project in Canada and will give all the necessary water transportation service that is necessary to relieve the Great Lakes of its export tonnage at the present time or for a great many years in the future.

The Barge canal will do more to relieve traffic than the proposed St. Lawrence ship canal because its open season is longer when compared with an approximate six months' season in the St. Lawrence River. Therefore it will have a more beneficial and continuous effect in its control of the railway rates from the West to the East.

43. The adjustment of the present railroad rates has been taken up by the Interstate Commerce Commission and will be, I believe, honestly and fairly dealt with from time to time and readjusted to meet the economic peace-time conditions. The readjustment of the railroad rates from the Great Lakes to the Atlantic Ocean will not be facilitated by the proposed canalization of the St. Lawrence River which can not be completed within 10 years.

44. If we are to derive any immediate benefit from the competitive waterway route to assist, it will have to come from the utilization of the present waterway lines competition such as the barge canal affords, which is now in operation.

45. The scheme of developing the St. Lawrence River with American money should never be allowed to become a reality until the United States at least is in a position to be a 50 per cent beneficiary, nor should we pay 50 per cent of the cost of the canalization of the St. Lawrence River until we are put in a position that the canalized St. Lawrence River throughout its entire length from the Great Lakes to the Atlantic Ocean is one-half within the territory of the United States.

Digitized by Google

46. I know from an engineering standpoint that this canal can be built and the necessary dams can be constructed to develop the water power and that the United States is rich enough to build them, but from our national standpoint they should not be built any more than the New York Central Railroad, the Pennsylvania Railroad, the New York, New Haven & Hartford Railroad, the Boston & Maine Railroad, the Rutland Railroad, and the Boston & Albany Railroad change their routes from terminals and harbors within the territory of the United States to terminals and harbors in the Dominion of Canada, so as to obtain terminal facilities nearer to Liverpool, than for the United States to change the route of its present waterway system by canalizing the St. Lawrence River, thereby creating terminal harbors in Canadian territory, so that the harbors may be closer to Liverpool. As far as our national transportation policy is concerned, there is no difference between a railway, highway, or a waterway route.

47. All our past expenditures and future efforts in relation to the improving of the Mississippi and Ohio Rivers and other internal waterway improvements will be useless if the canalization of the St. Lawrence River is made to compete to serve the same territory if it will accomplish what the proponents believe be true.

48. If this unheard-of expenditure is appropriated by Congress for the St. Lawrence waterway it will naturally curtail the waterway development within the territory of the United States, as the total cost will require a larger expenditure annually for the next 10 years than what we are appropriating annually now for all our interior waterway improvements.

49. We should not expend so large a sum of money to give to a competing nation the same transportation facility which we enjoy ourselves and in this instance, looking into the future, the total number of bushels of grain exported by the United States will gradually lessen as our domestic population increases, while the total number of bushels exported from Canada will increase as they develop additional acreage, and as time passes the return on the investment will be much greater from a transportation standpoint to Canada than to the United States. Our policy should be to develop a waterway system which will serve best our own producers and consumers for all time in the future.

50. The great Atlantic seaboard cities—Boston, New York, Philadelphia, Baltimore, Norfolk, Newport News, Charleston, Savannah, Jacksonville, Mobile, New Orleans, Galveston, and all other Atlantic seaboard cities—have been developed and have grown prosperous, largely on account of the close relation which has been built up, developed, and fostered for generations between the merchants, manufacturers, and traders and the producers from the fields and mines of the interior in the development of the natural tributaries to these Atlantic ports, and vast sums have been invested by the citizens of our country on these avenues of commerce, the railroads and steamship lines carrying the produce of our mines, fields, and factories between the interior of our country and the Atlantic seaports.

51. Changing our commerce balance at this time by the Government of the United States by the construction of an avenue of commerce running almost entirely through foreign territory would have

Digitized by Google

a disastrous effect if the proponents of this project are true, upon the great cities developed under the care of the Government and by means of the thrift, enterprise, and investment of the citizens of our own country; these would be destroyed in large measure by an appropriation from the public moneys of the United States obtained by taxing these seaboard cities for a waterway through foreign territory in competition with our domestic enterprises inaugurated and developed solely by the citizens of the United States and domestic capital.

52. Railroad congestion can not be entirely relieved by a waterway which, due to climatic conditions, only operates normally six months in the year on account of ice and fog.

53. The grain from the Middle West near and adjacent to Kansas City should be shipped via the Missouri River and Mississippi River all the way to the ocean by water, rather than via railway for 200 miles so as to pass through the St. Lawrence or any other eastern port.

54. When New York State investigated the building of the barge canal at a large expenditure, it employed several commissions at different times, each composed of competent engineers who in their reports condemned the St. Lawrence route and finally recommended the barge canal as it now exists, because from their experience and expert knowledge they believed it to be the cheapest and most economical waterway system that could be developed connecting the Great Lakes and the Atlantic Ocean, and the most practical and feasible scheme regarding width, depth, safety, and practicability of navigation.

55. The title of all the water-power rights south of the international line belong to the State of New York. The Federal Government can not develop it except for commerce under the Constitution. The St. Lawrence project is more than a 75 per cent power project.

56. The deepening of the channels, the rebuilding of the harbors, and the installation of the proper machinery for handling freight in loading and unloading ocean-going vessels on the Great Lakes will cost over a hundred million dollars in addition to the expenditure in the St. Lawrence proper.

57. It is not conducive to the continuance of harmonious and pleasant relations for two nations to enter into joint ownership and operation of so important a project. Either one or the other should build it, own it, and operate it, and have full control of it in time of peace as well as in time of war.

58. During the war time Canada cut off the supply of electric power to some of our manufacturing plants under the plea that she needed it for war-time purposes. The same thing will hold true in relation to this project if similar and like conditions should arise.

59. The truth about water navigation from the Middle West to Liverpool is that at most three types of craft are needed—lake vessels, built lightly and inexpensively, for cargo-carrying purposes exclusively; barges to traverse the interval between the Lakes and the sea, and the heavily constructed ocean craft, with large crews, staunchly built, which can brave the ocean storms and make as many round trips as possible in a given time.

Digitized by Google

60. The commission which represented New York at the ship canal hearings before the International Joint Commission reports that the average cost of transportation of wheat per bushel from upper lake ports to Liverpool, via Buffalo and the Erie Canal, was only 10.73 cents in the five years from 1910 to 1915. How can that normal rate be lowered to the Western farmer by introducing a through ocean route to the Great Lakes handicapped by far greater initial cost and greater cost of operation?

61. The lake steamer hauls freight both ways. The ocean carrier would return from Liverpool without a cargo if it returned to a non-distributing center in the United States, for the return cargo is the great problem for our existing ocean liners to-day.

62. I beg to submit statistics reported by the commission in opposition to the St. Lawrence Ship Canal and power project in a table setting forth the rate of freight by lake to Buffalo and by canal to New York year by year from 1910 to 1915 and from New York to Liverpool for the same length of time, together with a list of other costs which includes various expenses for handling the freight which was absorbed in this freight rate.

Taking a more recent period, that of 1910 to 1915, which period is considered as more truly representative of present-day conditions, the rate of freight by lake to Buffalo and by canal to New York was as hereafter shown:

Year.	Lake.	Canal.	Through.	Year.	Lake.	Canal.	Through.
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
1910	1.06	4.08	5.14	1914	1.28	4.27	5.55
1911	1.03	4.36	5.39	1915	1.33	4.47	5.80
1912	1.36	4.32	5.68				
1913	1.40	4.57	5.97	Average	1.243	4.345	5.588

During the 1910–1915 period the average ocean rate from New York to Liverpool was 5.15 cents per bushel. This information is derived from the official records of the New York Produce Exchange and is authoritative.

In citing figures of this character, particular emphasis should be laid on the fact that the bases named represents the transportation charges assumed by the commodity and not the cost of transportation as reflected in the charges of lake vessel, canal barge, and ocean vessel operations. Such latter figures are of course appreciably less than the rate of transportation under which the grain moved and a clear distinction must be made between "cost of transportation" as applied to the ship operator and "cost of transportation" as assumed by the consignee or consignor.

Moreover, the rates named include the transportation service via lake, canal, and ocean, and the incidental terminal service involved in transfer from lake vessels to canal barge and again to the ocean carrier.

The rates named are gross rates, and there is absorbed therein the cost of the following operations:

1. Elevator charge at upper lake port.
2. Lake cargo insurance.
3. Lake transportation to Buffalo.
4. Elevator charge at Buffalo.
5. Five days' free elevator storage at Buffalo.
6. Canal cargo insurance.
7. Canal transportation to New York.
8. Elevator charge at New York.
9. Three days' free storage on canal barge at New York.
10. Five days' free elevator storage at New York.
11. Ocean cargo insurance.
12. Transportation via ocean.

The average ocean rate, New York to Liverpool, as cited, is exclusive of the rate for the year 1915, during which year, because of war conditions, ocean rates reached abnormal levels.

Digitized by Google

Annual average freight rates on wheat per bushel, from Chicago to New York, by lake and canal, and by lake and rail, and from New York to Liverpool via ocean, for the years 1900 to 1914, inclusive.

Year.	By lake and canal.	By lake and rail.	New York to Liverpool.	Year.	By lake and canal.	By lake and rail.	New York to Liverpool.
	Cents.	*Cents.*	*Pence.*[1]		*Cents.*	*Cents.*	*Pence.*[1]
1900	4.92	5.05	3⅜	1908	6.50	6.50	1 9/16
1901	5.64	5.57	1½	1909	5.85	6.88	1⅝
1902	5.75	5.78	1 7/16	1910	5.60	6.54	1⅝
1903	5.94	6.17	1 7/16	1911	5.87	5.23	2
1904	5.21	5.02	1⅛	1912	6.07	6.42	3 1/16
1905	6.01	6.29	1⅛	1913	6.20	6.31	2 1/16
1906	6.44	6.40	1 7/16	1914	5.81	6.54	3
1907	7.18	6.97	1¼				

[1] A pence is equivalent to 2.03 cents on basis of $4.8665, the normal value of the English pound sterling in American money.

63. I quote below paragraphs from letters received from seven different shippers from various trans-Atlantic navigation companies setting forth their opinion as regards the uselessness of this project and their likelihood of utilizing it should it be finally constructed:

In reply to your letter of March 11, we beg to advise that there is no possibility of our using the Great Lakes and St. Lawrence River Canal should such be built. As a matter of fact, we are not in favor of the canal, as we feel that it will divert business from the established routes which we are interested in maintaining and on basis of which permanent terminals have been provided by us. We are positively opposed to the diversion of our cargoes from the United States North Atlantic ports.

I entirely and heartily approve of your attitude in this matter. I believe there is grave doubt as to whether the St. Lawrence Canal development would accomplish sufficient in the way of results to justify the cost of building the canal and developing the water power for which there is no near-by market.

There is of course a very large territory between the Atlantic seaboard and Chicago, south of the Great Lakes and the St. Lawrence, which would not be naturally tributary to the proposed route, so in any event we believe it would be impossible and undesirable to abandon our terminals at the Atlantic ports. Furthermore, many of our larger vessels draw in excess of 25 feet, so the use of the proposed canal would be confined to the smaller type of ship.

Replying to your favor of the 11th instant, we would state that our trade would not be affected by the proposed canal connecting the Great Lakes with the St. Lawrence River, and we therefore are not in a position to express an opinion in the matter.

The steamers handled by us are operating to Mediterranean and Adriatic ports, and the greater part of this traffic would no doubt continue to move via the Atlantic ports.

If 25 feet is to be the limit of depth in the proposed St. Lawrence Canal, it will of course only accommodate steamers of very moderate size, and the use of such a canal for steamers operating on the North Atlantic Ocean would therefore be limited. The White Star steamers are very deep draft, averaging in the neighborhood of 34 feet when loaded, so from a practical point of view it would obviously be impossible for them to navigate the proposed canal.

Referring to yours of the 11th, with respect to the agitation of a 25-foot canal connecting the Great Lakes with the St. Lawrence River, as operators of overseas equipment, we can not see wherein the proposed project would benefit shipowners or any appreciable number of shippers, so far as this country is concerned.

Independent of this phase of the project, it is not, in our judgment, a practical scheme, because ships suitable for ocean navigation could not safely be navigated in a 25-foot channel through the St. Lawrence River and the Great Lakes.

There can not be any safe, profitable business built up on such a project, from our study of this matter, and we are opposed to it.

Digitized by Google

64. Statement of Frank C. Munson, president of the Munson Steamship Line:

The proposition to canalize the St. Lawrence for ocean-going vessels is utterly impracticable from the shipping standpoint. Shipments of grain from Chicago to European ports by the proposed canal would require twice the time needed under the present system because of the low rate of speed with which ocean-going ships could navigate the 1,130 miles of this restricted waterway.

The cost of transportation on such ships through this canal would be at least double that under the present practice of sending grain by water to deep-sea ports for transfer to large ocean-going vessels. Only vessels of from three to four thousand tons could utilize a canal with a depth of 25 feet, as proposed, and even these would be unable to use many of the harbors and connecting waterways of the Great Lakes, which at the present time are only 20 to 21 feet in depth.

Thus to the cost of the canal, in order to make it practicable for these comparatively small vessels, must be added the cost of deepening Great Lake ports and channels.

In my opinion, any steamship company attempting to operate across the ocean and through the St. Lawrence Canal in competition with lines getting grain from rail or barge at New York or Montreal would be a losing venture from the start. If these facts were understood by our Representatives in Washington, there would be no question of their refusal to appropriate $252,000,000 of our good money or any part of such a sum for this purpose.

65. American labor's attitude:

Do you approve spending your American money in a foreign country, to pay foreign workmen, when so many American workers are unemployed?

Your answer is obvious, but your careful attention is called to what follows. Read it and act. Make your protest heard.

It is as a railroad man and a marine engineer, with the interest of my fellow workers at heart, that I am writing this, exposing one of the most brazen injustices ever attempted against the workers of the United States—a scheme to throw hundreds of millions of American dollars into a development in a foreign country, benefiting the working class of another country.

HAROLD K. LOVELESS,
Buffalo, N. Y.

66. The Federal Government should formulate and promote a national plan of internal waterways and adopt the principle of spending United States money for United States waterways under United States control.

67. The facts are that New York is not the "neck of the bottle," as claimed by the proponents of the St. Lawrence project. The St. Lawrence is already canalized and rates are already so low from Chicago to Montreal that no improvement is likely to be made in the St. Lawrence which can possibly affect the saving on grain rates as claimed by the propagandists in behalf of the St. Lawrence. The facts are that when a sufficient number of boats are placed on the Barge Canal the all-water rate via the Great Lakes-Barge Canal will be materially lower, and Montreal wants the United States to spend a half billion dollars so that without expense she will be able to retain a competitive waterway system with the waterways of the United States when they are made 100 per cent efficient.

68. In "a memorial concerning the fur trade of the Province of New York," presented to his excellency William Burnett, captain general and governor, by Cadwallader Colden, surveyor general of the Province, dated on the 10th day of November, 1724, Mr. Colden said that "notwithstanding all these advantages (which he had enumerated) the French labor under difficulties that no art or industry can remove. The mouth of the River of St. Lawrence, and more especially the Bay of St. Lawrence, lies so far north, and is thereby so often subject to tempestuous weather and thick fogs, that navigation thereof is very dangerous and never attempted but during the summer months.

Digitized by Google

"The wideness of this bay, together with many strong currents that run in it, the many shelves and sunken rocks that are everywhere spread over both the bay and river, and want of places for anchoring in the bay, all increase the danger of this navigation; so that a voyage to Canada is justly esteemed much more dangerous than to any other part of America. The many shipwrecks that happen in this navigation are but too evident proofs of the truth of this."

Notwithstanding all the precautions taken since that time many ships have been wrecked in the Gulf and River of St. Lawrence. It is known as the "graveyard of the Atlantic."

In 1837 the *Albeuria* foundered in the Gulf of St. Lawrence and 525 lives were lost; in 1840 the steamer *Dundee* was wrecked and 292 lives were lost; in 1817 the steamer *Montreal* was lost 15 miles above Quebec with 253 lives; in 1898 the French liner, *La Bourgoigne*, was in collision off Sable Island and 584 lives were lost; in 1914 the Canadian-Pacific liner *Empress of Ireland* was in collision with the collier *Storstad* in the St. Lawrence River near Father Point and sank in 20 minutes, and upward of 1,000 lives were lost. The commission which investigated that unparalleled disaster found that the navigation of the St. Lawrence is attended with the constant probability of fogs. Captain Kendall said "it was very foggy," and although the officers of the two vessels saw each other's vessel approaching, the fog settled down so suddenly that they were lost to each other's view and the collision occurred. It will be remembered that the loss of the White Star steamer *Titanic* in 1912 after colliding with an iceberg resulted in the loss of 1,500 lives. That disaster occurred, however, off the banks in the region of icebergs, which is the usual route of vessels passing between Liverpool and the Gulf of St. Lawrence.

Other disasters have occurred in the navigation of the River and Gulf of St. Lawrence, all of which tend to confirm the truth of the statements of navigators, in effect that the navigation of those waters on account of the constant menace of fogs, snow, and ice is most hazardous. This is borne out by the marine insurance rates, which increase from midsummer until November, when insurance can not be had at any rate, and thereupon insurance ceases altogether.

PETER G. TEN EYCK.

Digitized by Google

DEFINITIONS OF SOME OF THE TERMS USED IN RAILROAD ACCOUNTING AND OPERATING STATISTICS.

All other expenses.—This includes incidental general expenses which are not properly chargeable to other accounts.

All other revenue.—Revenue from transportation and incidental services not otherwise defined.

Average haul (freight).—The average distance the freight moves.

Average journey (passenger).—The average distance traveled per passenger.

Average miles represented by railway income account.—Total road mileage operated by the railroads included in the report or statement.

Bad-order cars.—Cars in an unserviceable condition retired from service until repairs are made.

Book value.—Is the value at which the property is carried in the property investment account in the general ledger of the carrier.

Capacity-freight cars.—The number of tons a freight car is designed to handle. Aggregate capacity is the sum of the capacity of all cars.

Car-mile.—The movement of a unit of car equipment 1 mile.

Car shortage.—The number of cars required for immediate loading in excess of the supply available.

Car surplus.—The number of serviceable cars in excess of current requirements.

Class 1 railroads.—Steam railroad companies engaged in interstate commerce having annual operating revenue above $1,000,000.

Class 2 railroads.—Steam railroad companies engaged in interstate and intrastate commerce having annual operating revenues from $100,000 to $1,000,000.

Class 3 railroads.—Railroad companies engaged in interstate and intrastate commerce not included in classes 1 and 2.

Dividends declared out of income.—This is the amount paid in dividends on stock from the net income.

Dividends out of surplus.—This is the amount of dividends on stock paid out of surplus.

Express revenue.—Revenue from the transportation of express matter and from use of facilities on trains or at stations incidental thereto.

Freight density.—The revenue ton-miles per mile of road.

Freight revenue.—Revenue from the transportation of freight and from transit, stop and reconsigning privileges upon the basis of lawful tariff rates.

Freight traffic.—The volume of goods transported.

General expense.—Expenses incurred of a general character not otherwise included, such as those for general administration and accounting, and those of the financial, law, real estate, tax, and claim departments.

Gross ton-miles.—Gross tons transported 1 mile. Gross tons includes the weight of the cars, including the caboose, as well as the weight of the load and the weight of the empty car when hauled empty. It may or may not include the weight of the locomotive and tender as indicated.

Hire of equipment.—This includes the net balance of (1) amounts receivable accrued for the use of the accounting company's locomotives and cars leased or interchanged, and (2) accounts payable accrued for the use of locomotives and cars of other carriers leased or interchanged and for the use of freight cars of individuals and companies not carriers.

"*Home car.*"—A car on its owner's rails.

"*Home line.*"—This term is used in connection with cars and has reference to the line owning the car.

Interest on funded debt.—The current accruals of interest on all classes of funded debt; also interest accruals on debenture stock and on receivers' certificates issued for a time of more than one year.

Interest on unfunded debt.—Interest accruals on unfunded debt such as short-term notes payable on demand or having dates of maturity one year or less from dates of issue, interest on receivers' certificates issued for a term of

Digitized by Google

one year or less, interest on matured funded securities and open accounts, including interest on overcharge claims, etc.

Investment in equipment.—This includes the cost of the several classes of equipment, such as cars and locomotives, owned by the carrier or held under equipment trust agreements for purchase.

Investment in miscellaneous properties.—This includes all property such as hotels, restaurants, commercial power plants, or other property not devoted to transportation service.

Investment in road.—This includes the cost of land for roadway and terminals, bridges, tracks, buildings, shops, other structures, fixed improvements, and roadway machines and tools devoted to transportation service.

Joint facility rent.—This includes the debit or credit balance of amounts receivable or payable for rent of tracks, yards, terminals, and other facilities owned or controlled by the accounting company and used jointly with other companies or individuals.

Locomotive-miles (helpers).—The number of miles run by a locomotive engaged in helping a train over a division or that portion covered by the run or on important grades.

Locomotive-miles (light).—The number of miles run by a locomotive without cars.

Locomotive-miles (principal).—The number of miles run by a locomotive handling a train.

Locomotive-miles (train switching).—The miles allowed train locomotives while engaged in switching service at terminals and way stations.

Locomotive-miles (work service).—The miles run by a locomotive in work-train service, also the miles of locomotives engaged solely in shop or material yard switching service.

Locomotive-miles (yard switching).—The miles allowed yard locomotives while switching in yards where regular switching service is maintained

Mail revenue.—Revenue from the transportation of United States mail.

Maintenance of equipment.—Cost of maintaining equipment used in railway operations, such as locomotives, cars, shop machinery, etc.

Maintenance of way and structures.—Cost of maintaining fixed improvements which are devoted to railway operations, such as roadway and tracks, bridges, buildings, etc.

Miles of road or miles of line.—The length of the railroad, the measurement of the single-track mileage.

Miles of track.—The length of all tracks—first, second, third, or other main tracks and yard tracks and sidings, spur tracks, etc.

Net income available for dividends.—This represents the sum available after all expenses have been paid, including interest on indebtedness, etc.

Net operating revenue.—The total operating revenue less the total operating expenses.

Net railway operating income.—This is the railway operating income plus or minus hire of equipment and joint facility rent credits or debits.

Net ton-miles.—Net tons transported 1 mile. Net tons is the weight of the freight constituting the contents of the freight cars and includes both revenue and nonrevenue tons.

Nonrevenue ton-miles.—Nonrevenue tons transported 1 mile. Nonrevenue tons is the weight of fuel, materials, and other supplies transported for the account of the carrier from which no revenue is derived.

Nonrevenue tons carried.—The weight of the nonrevenue or company freight carried.

Other deductions from income.—This includes miscellaneous deductions not mentioned specifically.

Other income.—This includes all income from other sources, including miscellaneous operating income.

Operating ratio.—The percentage which the total operating expenses bears to the total operating revenue.

Passenger density.—The revenue passenger miles per mile of road.

Passenger revenue.—Revenue from the transportation of passengers based upon tariff fares for passengers so transported.

Passenger traffic.—The number of passengers transported.

Property investment.—Property investment represents the cost of the property of the carriers devoted to transportation service as reported by them to the Interstate Commerce Commission.

Digitized by Google

Railway operating income.—This is the net operating revenue less taxes and uncollectible railway revenue.

Railway tax accruals.—This includes taxes of all kinds (including Federal income tax) relating to railway property, operations, and privileges on whatever basis assessed.

Rent for leased roads.—Amount receivable or payable for exclusive use of road, tracks, or bridges (including equipment or other railway property covered by the contract).

Revenue passengers carried.—The number of revenue passengers carried, including local and interline.

Revenue passenger-miles.—The number of revenue passengers carried 1 mile.

Revenue ton-miles.—Revenue tons transported 1 mile. Revenue tons is the weight of the freight transported upon which freight charges are paid.

Revenue tons originated on line.—The weight of the freight loaded into freight cars for transportation and upon which freight charges are assessed. This includes only the freight actually loaded on the carriers' lines for both local and interline movement.

Revenue tons transported.—This includes the tonnage transported, originated on own line, and the tonnage received from connecting lines.

Second, third, and other main tracks.—Main tracks laid parallel to the first main track.

Single-track mileage or first main-track mileage.—The length of the first main track of main and branch lines.

Switching and terminal companies.—Switching and terminal companies are independent or jointly owned and operated terminal railroads and are included in the appropriate class.

Tare ton-miles.—Gross ton-miles excluding the lading or net ton-miles.

Trackage rights.—Right to operate trains over specified tracks granted by the owning line by contract or other arrangement.

Track capacity.—The number of cars a length of track will hold.

Tractive power (locomotives).—The weight the locomotive can pull including its own weight, commonly termed the drawbar pull.

Traffic expense.—Expenses incurred for advertising, soliciting, and securing traffic for the carrier's lines and for preparing and distributing tariffs governing such traffic.

Train-mile.—The movement of a train a distance of 1 mile.

Transportation expense.—Expenses incurred for transporting persons and the property of others, including the expenses of station, train, yard, and terminal service; also the expenses of transporting company material in transportation service trains.

Total income.—The sum of net railway operating income and other income.

Total operating expenses.—Expenses of conducting transportation service, including the expenses of maintaining the plant used in the service.

Total operating revenue.—The revenue received from transportation and service incidental thereto.

Uncollectible railway revenue.—Includes the amount of uncollected revenue charges against companies and individuals representing tariff charges for service rendered (including not only the accounting carrier's revenue charges, but also charges advanced to other carriers) when such amounts have been properly determined to be uncollectible.

Yard tracks and sidings.—All tracks not used as main tracks, including passing tracks, sidings, yard tracks, spur tracks, industry tracks, team tracks, etc.

Digitized by Google

TABLE A14.—*American Railway Express Company—Second-class express rates in cents per 100 pounds applying on all articles of food and drink.*

Explanation: The rates shown for each zone are second-class rates (75 per cent of the first-class rates) applying within that zone, as fixed by the Interstate Commerce Commission effective February 1, 1914.

Rates from a point in one zone to a point in another zone are based upon the entire haul and vary according to the number of blocks in each zone.

The mileages shown are average distances based upon the distance between typical or representative points in each block.

The rates effective February 1, 1914, are the rates ordered by the Interstate Commerce Commission in case 4198 and represent an average reduction of 18 per cent from rates previously in effect.

The rates effective July 15, 1918, represent an increase of 10 per cent and were authorized by the Interstate Commerce Commission in Fifteenth Section Order No. 746 of June 17, 1918.

The rates effective January 1, 1918, represent an average increase of approximately 8 per cent and were authorized by the Director General of Railroads in General Order No. 56 of December 19, 1918.

The rates effective September 1, 1920, represent an increase of 12½ per cent and were authorized by the Interstate Commerce Commission August 11, 1920, in case 11326.

The rates effective October 13, 1920, represent a further increase of 13½ per cent in rates effective prior to September 1, 1920, making a total increase of 26 per cent in rates effective prior to September 1, 1920. This increase was for the purpose of paying the increased wages granted by the United States Railroad Labor Board in decisions 2 and 3 of July 20 and August 10, 1920, respectively, and was authorized by the Interstate Commerce Commission in supplemental order in case 11326.

Miles.	Zone 1.					Zone 2.					Zones 3 and 5.					Zone 4.				
	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.
12.5	38	42	54	60	67	38	42	49	56	62	42	46	54	60	67	45	49	58	65	73
25.0	38	42	54	60	67	38	42	49	56	62	45	49	58	65	73	57	63	70	79	88
37.5	42	46	58	65	73	42	46	54	60	67	49	54	63	69	77	68	75	82	93	104
50.0	45	49	63	69	77	45	49	58	65	73	53	58	66	74	83	79	87	96	107	119
62.5	57	63	75	83	94	57	63	70	79	88	68	75	82	93	104	98	108	115	130	146
100.0	57	63	75	83	94	64	70	79	88	98	68	75	82	93	104	98	108	115	130	146
150.0	68	75	87	97	109	79	87	96	107	119	87	96	103	116	130	117	129	136	153	171
200.0	75	82	96	107	119	90	99	108	121	135	105	115	124	140	156	139	153	162	181	203
250.0	87	96	108	121	135	105	115	124	140	156	120	132	141	158	177	158	174	181	204	229
300.0	94	103	115	130	146	117	129	136	153	171	135	148	157	176	197	177	195	202	227	254
350.0	105	115	129	143	161	132	145	153	171	192	150	165	174	195	218	195	214	223	251	281
400.0	113	124	136	153	171	143	157	165	186	208	169	186	195	218	244	214	235	244	274	306
450.0	120	132	145	162	182	154	169	178	200	223	184	202	211	236	265	233	256	264	297	333
500.0	128	141	153	171	192	165	181	190	214	239	195	214	223	251	281	248	273	280	316	353
550.0	135	148	162	181	203	177	195	202	227	254	210	231	240	269	302	267	294	301	338	379
600.0	143	157	169	190	213	188	207	214	242	270	225	247	256	288	323	285	313	322	362	406
650.0	150	165	178	200	223	199	219	228	255	286	240	264	273	306	343	300	330	339	380	426
700.0	158	174	186	209	233	210	231	240	269	302	252	277	285	320	359	315	346	355	399	447
750.0	162	178	190	214	239	218	240	247	278	312	263	289	297	335	374	330	363	372	418	468
800.0	169	186	198	223	250	229	252	261	292	327	278	306	313	353	395	349	384	393	440	494
850.0	173	190	202	227	254	237	261	268	302	338	289	318	327	366	410	364	400	409	459	514
900.0	180	198	211	236	265	248	273	280	316	353	300	330	339	380	426	375	412	421	473	530
950.0	184	202	214	242	270	255	280	289	325	364	312	343	351	394	441	390	429	438	492	551
1,000.0	188	207	219	245	275	263	289	297	335	374	323	355	363	409	458	405	445	454	511	572

Digitized by Google

TABLE A14.—*American Railway Express Company—Second-class express rates in cents per 100 pounds applying on all articles of food and drink*—Contd.

Miles.	Zone 1.					Zone 2.					Zones 3 and 5.					Zone 4.				
	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct. 13, 1920.	Feb. 1, 1914.	July 15, 1918.	Jan. 1, 1919.	Sept. 1, 1920.	Oct 13, 1920.
1,050.0	192	211	223	251	261	270	297	306	344	385	334	367	376	422	473	420	462	471	529	593
1,100.0	199	219	231	260	291	282	310	318	357	400	349	384	393	440	494	435	478	487	548	614
1,150.0	207	228	240	269	302	293	322	330	371	416	360	396	405	455	509	454	499	508	571	639
1,200.0	214	235	247	278	312	304	334	343	385	431	375	412	421	473	530	469	516	525	589	659
1,250.0	222	244	256	288	323	315	346	355	399	447	390	429	438	492	551	488	537	544	613	686
1,300.0	229	252	264	297	333	327	360	367	413	462	405	445	454	511	572	507	558	565	635	712
1,350.0	237	261	273	306	343	338	372	379	427	479	420	462	471	529	593	522	574	582	654	733
1,400.0	244	268	280	316	353	349	384	393	440	494	432	475	483	542	608	540	594	603	677	759
1,450.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	447	492	499	561	629	555	610	619	696	780
1,500.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	462	508	516	580	650	574	631	640	719	806
1,550.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	477	525	532	599	670	593	652	660	743	832
1,600.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	492	541	549	617	691	608	669	676	761	853
1,650.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	508	558	561	632	707	627	690	697	784	878
1,700.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	518	570	577	650	728	642	706	714	808	899
1,750.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	533	586	594	668	749	660	726	735	826	926

Digitized by Google

TABLE A15.—*Rates on fruits and vegetables in cents per 100 pounds.*

	Between Sacramento, San Jose, Fresno, Los Angeles, and Brawley, Calif., and—													
	Denver.		Kansas City.		Omaha.		St. Louis.		St. Paul.		Chicago.		Detroit.	
	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.
Feb. 1, 1914	200	300	250	300	250	300	275	349	275	349	275	349	300	398
Apr. 10, 1914	200	300	200	300	200	300	250	349	250	349	250	349	300	398
July 15, 1918	200	330	200	330	200	330	250	384	250	384	250	384	300	438
July 25, 1918	220	330	220	330	220	330	275	384	275	384	275	384	330	438
Aug. 1, 1918	230	330	230	330	230	330	285	384	285	384	285	384	340	438
Jan. 1, 1919	230	340	230	340	230	340	285	394	285	394	285	394	340	448
Sept. 1, 1920	259	383	259	383	259	383	321	443	321	443	321	443	383	504
Oct. 13, 1920	280	428	280	428	280	428	350	496	350	496	350	496	428	564

	Between Sacramento, San Jose, Fresno, Los Angeles, and Brawley, Calif., and—													
	Cincinnati.		Cleveland.		Buffalo.		Pittsburgh.		Philadelphia.		New York.		Boston.	
	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.
Feb. 1, 1914	300	398	300	398	300	398	300	398	300	398	300	398	300	398
Apr. 10, 1914	300	398	300	398	300	398	300	398	300	398	300	398	300	398
July 15, 1918	300	438	300	438	300	438	300	438	300	438	300	438	300	438
July 25, 1918	330	438	330	438	330	438	330	438	330	438	330	438	330	438
Aug. 1, 1918	340	438	340	438	340	438	340	438	340	438	340	438	340	438
Jan. 1, 1919	340	448	340	448	340	448	340	448	340	448	340	448	340	448
Sept. 1, 1920	383	504	383	504	383	504	383	504	383	504	383	504	383	504
Oct. 13, 1920	428	564	428	564	428	564	428	564	428	564	428	564	428	564

Digitized by Google

TABLE A15.—*Rates on fruits and vegetables in cents per 100 pounds*—Continued.

	Between Hood River, Oreg., Bishop, Seattle, Spokane, Wenatchee, and Yakima, Wash., and—													
	Denver.		Kansas City.		Omaha.		St. Louis.		St. Paul.		Chicago.		Detroit.	
	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.
Feb. 1, 1914	225	300	250	300	250	300	275	349	250	300	275	349	300	398
Apr. 10, 1914	200	300	200	300	200	300	253	349	250	300	250	349	300	398
July 15, 1918	200	330	200	330	200	330	250	384	200	330	250	384	300	438
July 25, 1918	220	330	220	330	220	330	275	384	220	330	275	384	330	438
Aug. 1, 1918	230	330	230	330	230	330	285	384	230	330	285	384	340	438
Jan. 1, 1919	230	340	230	340	230	340	285	394	230	340	285	394	340	448
Sept. 1, 1920	259	383	259	383	259	383	321	443	259	383	321	443	383	504
Oct. 13, 1920	290	428	290	428	290	428	359	496	290	428	359	496	428	564

	Between Hood River, Oreg., Bishop, Seattle, Spokane, Wenatchee, and Yakima, Wash., and—													
	Cincinnati.		Cleveland.		Buffalo.		Pittsburgh.		Philadelphia.		New York.		Boston.	
	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.
Feb. 1, 1914	300	398	300	398	300	398	300	398	300	398	300	398	300	398
Apr. 10, 1914	300	398	300	398	300	398	300	398	300	398	300	398	300	398
July 15, 1918	300	438	300	438	300	438	300	438	300	438	300	438	300	438
July 25, 1918	330	438	330	438	330	438	330	438	330	438	330	438	330	438
Aug. 1, 1918	340	438	340	438	340	438	340	438	340	438	340	438	340	438
Jan. 1, 1919	340	448	340	448	340	448	340	448	340	448	340	448	340	448
Sept. 1, 1920	383	504	383	504	383	504	383	504	383	504	383	504	383	504
Oct. 13, 1920	428	564	428	564	428	564	428	564	428	564	428	564	428	564

Digitized by Google

TABLE A16.—*Rates on citrus fruits and pineapples in cents per 100 pounds.*[1]

From—	To— Kansas City, Mo.	St. Louis, Mo.	Omaha, Nebr.	St. Paul, Minn.	Chicago, Ill.	Detroit, Mich.	Columbus, Ohio.	Cleveland, Ohio.	Pittsburgh, Pa.	Buffalo, N. Y.	New York, N. Y.	Albany, N. Y.	Boston, Mass.	Providence, R. I.	Richmond, Va.	Nashville, Tenn.	Louisville, Ky.	Washington, D. C.
Jacksonville, Fla.:																		
Nov. 1, 1914	252	199	282	282	207	229	195	222	203	225	203	218	225	218	158	158	188	184
July 15, 1918	277	219	310	310	228	252	214	244	223	247	223	240	247	240	174	174	207	202
Jan. 1, 1919	287	229	320	320	238	262	224	254	233	257	233	250	257	250	184	184	217	212
Sept. 1, 1920	323	258	360	360	268	295	252	286	262	289	262	281	289	281	207	207	244	239
Oct. 13, 1920	362	289	408	403	300	330	282	320	294	324	294	315	324	315	232	232	278	267
De Land, Fla.:																		
Nov. 1, 1914	263	208	289	289	218	237	208	233	218	233	210	229	233	233	173	173	195	188
July 15, 1918	289	223	318	318	240	261	223	256	240	256	231	252	256	256	190	190	214	207
Jan. 1, 1919	299	233	328	328	250	271	233	266	250	266	241	262	266	266	200	200	224	217
Sept. 1, 1920	336	262	369	369	281	305	262	299	281	299	271	295	299	299	225	225	252	244
Oct. 13, 1920	377	294	413	413	315	341	294	335	315	335	304	330	335	335	252	252	282	273
Dade City, Fla.:																		
Nov. 1, 1914	270	214	300	300	225	248	210	240	229	252	229	248	248	248	188	184	199	203
July 15, 1918	297	235	330	330	247	273	231	264	252	277	252	273	273	273	207	202	219	223
Jan. 1, 1919	307	245	340	340	257	283	241	274	262	287	262	283	283	283	217	212	238	233
Sept. 1, 1920	345	276	383	383	289	318	271	308	295	323	295	318	318	318	244	239	262	262
Oct. 13, 1920	387	309	428	428	324	357	304	345	330	362	330	357	357	357	273	267	294	294
Sanford, Fla.:																		
Nov. 1, 1914	270	214	300	300	233	252	218	240	229	244	229	244	248	244	188	184	203	199
July 15, 1918	297	235	330	330	256	277	240	265	252	268	252	268	273	268	207	202	223	219
Jan. 1, 1919	307	245	340	340	266	287	250	274	262	278	262	278	283	278	217	212	233	229
Sept. 1, 1920	345	276	383	383	299	323	281	308	295	313	295	313	318	313	244	239	262	258
Oct. 13, 1920	387	309	428	428	335	362	315	345	330	350	330	350	357	350	273	267	294	289
Tampa, Fla.:																		
Nov. 1, 1914	289	222	315	308	240	255	225	248	237	263	237	255	263	263	199	199	218	210
July 15, 1918	318	244	346	339	264	280	247	273	261	289	261	280	289	289	219	219	240	231
Jan. 1, 1919	328	254	356	349	274	290	257	283	271	299	271	290	299	299	229	229	250	241
Sept. 1, 1920	369	286	401	393	308	326	289	318	305	336	305	326	336	336	258	258	281	271
Oct. 13, 1920	413	320	449	440	345	365	324	357	341	377	341	365	377	377	289	289	315	304
Miami, Fla.:																		
Nov. 1, 1914	315	259	342	334	274	289	270	289	270	289	263	282	289	289	225	225	248	233
July 15, 1918	346	285	376	367	301	318	297	318	297	318	289	310	318	318	247	247	273	256
Jan. 1, 1919	356	295	386	377	311	328	307	328	307	328	299	320	328	328	257	257	283	266
Sept. 1, 1920	401	332	434	424	350	369	345	369	345	369	336	360	369	369	289	289	318	299
Oct. 13, 1920	449	372	486	475	392	413	387	413	387	413	377	403	413	413	324	324	357	335

[1] No commodity rate on Feb 1, 1914; second-class rate applied.

Digitized by Google

TABLE A17.—*Rates on butter, cheese, dressed poultry, eggs, in cents per 100 pounds.*

From—	To—													
	Denver.		Kansas City.		Omaha.		St. Louis.		St. Paul.		Chicago.		Detroit.	
	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.
California principal shipping points:														
Feb. 1, 1914	300	398	300	398	300	398	350	450	350	473	350	473	(1)	(1)
Nov. 10, 1914	300	398	300	398	300	398	350	450	350	473	350	473	(1)	(1)
Mar. 13, 1916	300	398	300	398	300	398	350	450	350	473	350	473	(1)	(1)
Apr. 5, 1916	300	398	300	398	300	398	350	450	350	473	350	473	400	(1)
Dec. 15, 1916	300	398	300	398	300	398	350	450	350	473	350	473	400	(1)
Jan. 17, 1917	300	398	300	398	300	398	350	450	350	473	350	473	400	(1)
July 15, 1918	300	398	300	398	300	398	350	450	350	473	350	473	400	(1)
July 25, 1918	330	398	330	398	330	398	385	450	385	473	385	473	440	(1)
Aug. 1, 1918	330	438	330	438	330	438	385	495	385	520	385	520	440	(1)
Jan. 1, 1919	340	448	340	448	340	448	395	505	395	530	395	530	450	(1)
Sept. 1, 1920	383	504	383	504	383	504	444	568	444	596	444	596	506	(1)
Oct. 13, 1920	428	564	428	564	428	564	498	636	498	668	498	668	567	813
Washington principal shipping points:														
Feb. 1, 1914	300	398	300	398	300	398	350	450	300	398	350	473	(1)	(1)
Feb. 22, 1914	300	398	300	398	300	398	350	450	300	398	350	473	(1)	(1)
Dec. 16, 1915	300	398	300	398	300	398	350	450	300	398	350	473	(1)	(1)
July 5, 1916	300	398	300	398	300	398	350	450	300	398	350	473	400	(1)
July 25, 1918	330	398	330	398	330	398	385	450	330	398	385	474	440	(1)
Aug. 1, 1918	330	438	330	438	330	438	385	495	330	438	385	520	440	(1)
Jan. 1, 1919	340	448	340	448	340	448	395	505	340	448	395	530	450	(1)
Sept. 1, 1920	383	504	383	504	383	504	444	568	383	504	444	596	506	(1)
Oct. 13, 1920	428	564	428	564	428	564	498	636	428	564	498	668	567	(1)
Oregon principal shipping points:														
Feb. 1, 1914	300	375	300	398	300	398	350	450	300	398	350	473	(1)	(1)
Feb. 22, 1914	300	375	300	398	300	398	350	450	300	398	350	473	(1)	(1)
Dec. 16, 1915	300	375	300	398	300	398	350	450	300	398	350	473	(1)	(1)
July 5, 1916	300	375	300	398	300	398	350	450	300	398	350	473	400	(1)
July 25, 1918	330	375	330	398	330	398	385	450	330	398	385	473	440	(1)
Aug. 1, 1918	330	412	330	438	330	438	385	495	330	438	385	520	440	(1)
Jan. 1, 1919	340	422	340	448	340	448	395	505	340	448	395	530	450	(1)
Sept. 1, 1920	383	475	383	504	383	504	444	568	383	504	444	596	506	(1)
Oct. 13, 1920	428	532	428	564	428	564	498	636	428	564	498	668	567	(1)

Digitized by Google

From—	To— Cincinnati.		Cleveland.		Buffalo.		Pittsburgh.		Philadelphia.		New York.		Boston.	
	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.	Carload.	Less than carload.
California, principal shipping points:														
Feb. 1, 1914	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)
Nov. 10, 1914	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)
Mar. 13, 1916	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)	400	(1)	400	(1)	400	(1)
Apr. 6, 1916	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)
Dec. 15, 1916	400	563	400	(1)	400	(1)	400	(1)	400	642	400	645	400	657
Jan. 17, 1917	400	563	400	578	400	608	400	600	400	642	400	645	400	657
July 15, 1918	400	563	400	578	400	608	400	600	400	642	400	645	400	657
July 25, 1918	440	563	440	578	440	608	440	600	440	642	440	645	440	657
Aug. 1, 1918	440	619	440	636	440	669	440	660	440	706	440	709	440	723
Jan. 1, 1919	450	629	450	646	450	679	450	670	450	716	450	719	450	738
Sept. 1, 1920	506	708	506	727	506	764	506	754	506	806	506	809	506	830
Oct. 13, 1920	567	793	567	814	567	856	567	844	567	902	567	906	567	924
Washington principal shipping points:														
Feb. 1, 1914	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Feb. 22, 1914	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)
Dec. 16, 1915	(1)	(1)	(1)	(1)	400	(1)	400	(1)	400	(1)	400	(1)	(1)	(1)
July 5, 1916	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)
July 25, 1918	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)
Aug. 1, 1918	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)
Jan. 1, 1919	450	(1)	450	(1)	450	(1)	450	(1)	450	(1)	450	(1)	450	(1)
Sept. 1, 1920	506	(1)	506	(1)	506	(1)	506	(1)	506	(1)	506	(1)	506	(1)
Oct. 13, 1920	567	(1)	567	(1)	567	(1)	567	(1)	567	(1)	567	(1)	567	(1)
Oregon principal shipping points:														
Feb. 1, 1914	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Feb. 22, 1914	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)	(1)	(1)	400	(1)	(1)	(1)
Dec. 16, 1915	(1)	(1)	(1)	(1)	400	(1)	400	(1)	400	(1)	400	(1)	(1)	(1)
July 5, 1916	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)	400	(1)
July 25, 1918	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)
Aug. 1, 1918	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)	440	(1)
Jan. 1, 1919	450	(1)	450	(1)	450	(1)	450	(1)	450	(1)	450	(1)	450	(1)
Sept. 1, 1920	506	(1)	506	(1)	506	(1)	506	(1)	506	(1)	506	(1)	506	(1)
Oct. 13, 1920	567	(1)	567	(1)	567	(1)	567	(1)	567	(1)	567	(1)	567	(1)

[1] No special commodity rates in effect.

Digitized by Google

From—	To— Chicago, Ill.	St. Paul, Minn.	St. Louis, Mo.	Omaha, Nebr.	New York, N. Y.	Cincinnati, Ohio.	Chicago, Ill.	St. Paul, Minn.	St. Louis, Mo.	Omaha, Nebr.	New York, N. Y.	Cincinnati, Ohio.	Chicago, Ill.	St. Paul, Minn.	St. Louis, Mo.	Omaha, Nebr.	New York, N. Y.	Cincinnati, Ohio.
	Berries.						Fruits.						Vegetables.					
New Orleans, La.:																		
Feb. 1, 1914	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Dec. 31, 1919	149	201	149	185	218	149	136	186	136	169	202	136	120	164	120	153	180	120
Sept. 1, 1920	168	226	168	208	245	168	153	209	153	190	227	153	135	185	135	172	203	135
Oct. 13, 1920	188	253	188	233	275	188	171	234	171	213	255	171	151	207	151	193	227	151
Lake Charles, La.:																		
Feb. 1, 1914	[2] 56	[2] 61	[2] 45	[2] 53	[2] 77	[2] 61	125	135	100	120	185	140	120	130	100	120	175	135
June 10, 1915	168	188	135	159	231	183	125	135	100	120	185	140	120	130	100	120	175	135
July 25, 1918	185	201	148	175	254	201	137	148	110	132	203	154	132	143	110	132	192	148
Dec. 31, 1919	195	211	158	185	264	211	147	158	120	142	213	164	142	153	120	142	202	158
Sept. 1, 1920	219	237	178	208	297	237	165	178	135	160	240	185	160	172	135	160	227	178
Oct. 13, 1920	246	266	199	233	333	266	185	199	151	179	268	207	179	193	151	179	255	199
Austin, Tex.:																		
Feb. 1, 1914	[2] 56	[2] 61	[2] 45	[2] 53	[2] 77	[2] 61	125	135	100	120	185	140	120	130	100	120	175	135
June 10, 1915	168	183	135	159	231	183	125	135	100	120	185	140	120	130	100	120	175	135
July 25, 1918	185	201	148	175	254	201	137	148	110	132	203	154	132	143	110	132	192	148
Dec. 31, 1919	195	211	158	185	264	211	147	158	120	142	213	164	142	153	120	142	202	158
Sept. 1, 1920	219	237	178	208	297	237	165	178	135	160	240	185	160	172	135	160	227	178
Oct. 13, 1920	246	266	199	233	333	266	185	199	151	179	268	207	179	193	151	179	255	199
Hitchcock, Tex.:																		
Feb. 1, 1914	[2] 56	[2] 61	[2] 45	[2] 53	[2] 77	[2] 61	125	135	100	120	185	140	120	130	100	120	175	135
June 10, 1915	168	183	135	159	231	183	125	135	100	120	185	140	120	130	100	120	175	135
July 25, 1918	185	201	148	175	254	201	137	148	110	132	203	154	132	143	110	132	192	148
Dec. 31, 1919	195	211	158	185	264	211	147	158	120	142	213	164	142	153	120	142	202	158
Sept. 1, 1920	219	237	178	208	297	237	165	178	135	160	240	185	160	172	135	160	227	178
Oct. 13, 1920	246	266	199	233	333	266	185	199	151	179	268	207	179	193	151	179	255	199
Jacksonville, Tex.:																		
Feb. 1, 1914	[2] 51	[2] 56	[2] 40	[2] 48	[2] 72	[2] 55	120	125	100	110	175	135	115	120	90	110	165	125
June 10, 1915	153	168	120	124	216	165	120	125	100	110	175	135	115	120	90	110	165	125
July 25, 1918	168	185	132	136	238	181	132	137	110	121	192	148	126	132	99	121	181	137
Dec. 31, 1919	178	195	142	168	248	191	142	147	120	131	202	158	136	142	109	131	191	147
Sept. 1, 1920	200	219	160	189	279	215	160	165	135	147	227	178	153	160	123	147	215	165
Oct. 13, 1920	224	246	179	212	312	241	179	185	151	165	255	199	171	179	137	165	241	185
San Benito, Tex.:																		
Feb. 1, 1914	150	175	125	150	210	175	150	175	125	150	210	175	150	160	125	150	200	160
June 10, 1915	193	208	160	184	266	208	150	175	125	150	210	175	150	160	125	150	200	160
July 25, 1918	212	229	176	202	282	229	165	192	137	165	231	192	165	176	137	165	220	176
Dec. 31, 1919	222	239	186	212	292	239	175	202	147	175	241	202	175	186	147	175	230	186
Sept. 1, 1920	250	269	209	239	329	269	197	227	165	197	271	227	197	209	165	197	259	209
Oct. 13, 1920	280	301	234	267	368	301	221	256	185	221	304	255	221	234	185	221	290	234

[1] No special commodity rate in effect.

[2] Per 24-quart crate.

Digitized by Google

TABLE A19.—*Statement showing percentage increase in second class express rates, 1914–1920.*

Miles.	Zone 1.			Zone 2.			Zones 3 and 5.			Zone 4.		
	Rates.		Per cent increase.	Rates.		Per cent increase.	Rates.		Per cent increase.	Rates.		Per cent increase.
	1914	1920		1914	1920		1914	1920		1914	1920	
25	38	67	76.3	38	62	63.1	45	73	62.2	57	88	54.3
50	45	77	71.1	45	73	62.2	53	83	56.6	79	1.19	50.6
100	57	94	64.9	64	98	53.1	68	1.04	52.9	98	1.46	48.9
200	75	1.19	58.6	90	1.35	50.0	1.05	1.56	48.5	1.39	2.03	46.0
400	1.13	1.71	51.3	1.43	2.08	45.4	1.69	2.44	44.3	2.14	3.06	42.9
500	1.28	1.92	50.0	1.65	2.39	44.8	1.95	2.81	44.1	2.48	3.53	42.3
750	1.62	2.39	47.5	2.18	3.12	43.1	2.63	3.74	42.2	3.30	4.68	41.8
1,000	1.88	2.75	46.2	2.63	3.74	42.2	3.23	4.58	41.7	4.05	5.72	41.2
1,400	2.44	3.53	44.6	3.49	4.94	41.5	4.32	6.08	40.7	5.40	7.59	40.5
1,750	.....	.....	.....	.....	.....	.....	5.33	7.49	40.5	6.60	9.26	40.3

Digitized by Google

TABLE A66.

WHEAT, NO. 1 HARD COMMON WHITE, FROM QUINCY, WASH., TO SEATTLE, WASH.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundred weight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12 (11−8)	13 (8−11)	14	15	16 (11−6)	17 (7÷16)	18	19	20
1912–13.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
Oct. 15			71.0	9.0	80.0			83.0	3.0		12.7	9.8	12.0	75.0			
Nov. 19			68.0	9.0	77.0			81.0	4.0		13.2	11.1	13.0	69.2			
Dec. 17			69.0	9.0	78.0			82.0	4.0		13.0	11.0	13.0	69.2			
Jan. 21			78.0	9.0	87.0			93.5	6.5		11.5	9.6	15.5	58.1			
Feb. 18			80.0	9.0	89.0			95.0	6.0		11.3	9.5	15.0	60.0			
Mar. 18			84.0	9.0	93.0			97.0	4.0		10.7	9.3	13.0	69.2			
Apr. 15			84.0	9.0	93.0			98.0	5.0		10.7	9.2	14.0	64.3			
May 20			86.0	9.0	95.0			100.0	5.0		10.5	9.0	14.0	64.3			
June 17			85.0	9.0	94.0			99.0	5.0		10.6	9.1	14.0	64.3			
July 15			77.0	9.0	86.0			91.0	5.0		11.7	9.9	14.0	64.3			
Aug. 19			72.0	9.0	81.0			85.0	4.0		12.5	10.6	13.0	69.2			
Sept. 16			77.0	9.0	86.0			92.0	6.0		11.7	9.8	15.0	60.0			
Average	86.0	68.0	77.6	9.0	86.6	100.0	81.0	91.4	4.8		11.6	9.8	13.8	65.2	200.0	15.0	1.5
1915–16.																	
Oct. 19			87.0	9.0	96.0			99.0	3.0		10.3	9.1	12.0	75.0			
Nov. 16			83.0	9.0	92.0			96.5	4.5		10.8	9.3	13.5	66.7			
Dec. 21			85.0	9.0	94.0			100.0	6.0		10.6	9.0	15.0	60.0			
Jan. 18			92.0	9.0	101.0			104.0	3.0		9.8	8.7	12.0	75.0			
Feb. 15			91.0	9.0	100.0			103.0	3.0		9.9	8.7	12.0	75.0			
Mar. 21			87.0	9.0	96.0			102.0	6.0		10.3	8.8	15.0	60.0			
Apr. 18			92.0	9.0	101.0			106.0	5.0		9.8	8.5	14.0	64.3			
May 16			90.0	9.0	99.0			107.0	8.0		10.0	8.4	17.0	52.9			
June 20			82.0	9.0	91.0			97.0	6.0		11.0	9.3	15.0	60.0			

Digitized by Google

July 18			87.0	9.0	96.0			102.0	6.0								
Aug. 15			106.0	9.0	115.0			121.0	6.0		8.5	7.4	15.0	60.0			
Sept. 19			118.0	9.0	127.0			137.0	10.0		7.6	6.6	19.0	47.4			
Average	118.0	82.0	91.7	9.0	100.7	137.0	96.5	106.2	5.5		9.8	8.5	14.5	62.1	200.0	15.0	1.5
1920-21.																	
Oct. 19			210.0	14.4	224.4			230.0	5.6		6.9	6.3	20.0	72.0			
Nov. 16			192.0	14.4	206.4			212.0	5.6		7.5	6.8	20.0	72.0			
Dec. 21			149.0	14.4	163.4			170.0	6.6		9.7	8.5	21.0	68.6			
Jan. 18			155.0	14.4	169.4			180.0	10.6		9.3	8.0	26.0	57.6			
Feb. 15			147.0	14.4	161.4			165.0	3.6		9.8	8.7	18.0	80.0			
Mar. 15			137.0	14.4	151.4			157.0	5.6		10.5	9.2	20.0	72.0			
Apr. 19			106.0	14.4	120.4			129.0	8.6		13.6	11.2	28.0	62.6			
May 17			121.0	14.4	135.4			142.0	6.6		11.9	10.1	21.0	68.6			
June 21			120.0	14.4	134.4			140.0	5.6		12.0	10.3	20.0	72.0			
July 19				14.4													
Aug. 16			100.0	14.4	114.4			119.0	4.6		14.4	12.1	19.0	75.8			
Sept. 20			101.0	14.4	115.4			121.0	5.6		14.3	11.9	20.0	72.0			
Average	210.0	100.0	139.8	14.4	154.2	230.0	119.0	160.5	6.3		10.3	9.0	20.7	69.6	200.0	24.0	2.4

WHEAT, NO. 2 HARD WINTER, FROM KEARNEY TO OMAHA, NEBR.

1912-13.																	
Oct. 15			75.0	8.2	83.2			85.0	1.8		10.9	9.6	10.0	82.0			
Nov. 19			70.0	8.2	78.2			80.5	2.3		11.7	10.2	10.5	78.1			
Dec. 17			68.0	8.2	76.2			81.0	4.8		12.1	10.1	13.0	63.1			
Jan. 21			74.0	8.2	82.2			85.3	3.1		11.1	9.6	11.3	72.6			
Feb. 18			72.0	8.2	80.2			83.0	2.8		11.4	9.9	11.0	74.5			
Mar. 18			71.0	8.2	79.2			82.3	3.1		11.5	10.0	11.3	72.6			
Apr. 15			73.0	8.2	81.2			85.0	3.8		11.2	9.6	12.0	68.3			
May 20			73.5	8.2	81.7			85.5	3.8		11.2	9.6	12.0	68.3			
June 17			74.5	8.2	82.7			86.5	3.8		11.0	9.5	12.0	68.3			
July 15			68.0	8.2	76.2			79.5	3.3		12.1	10.3	11.5	71.3			
Aug. 19			70.0	8.2	78.2			80.8	2.6		11.7	10.1	10.8	75.9			
Sept. 16			70.0	8.2	78.2			84.0	5.8		11.7	9.8	14.0	58.6			
Average	75.0	68.0	71.6	8.2	79.8	86.5	79.5	83.2	3.4		11.5	9.9	11.6	70.7	186.3	13.6	1.46
1915-16.																	
Oct. 15			94.0	8.2	102.2			105.0	2.8		8.7	7.8	11.0	74.5			
Nov. 16			90.0	8.2	98.2			100.0	1.8		9.1	8.2	10.0	82.0			
Dec. 21			94.0	8.2	102.2			114.0	11.8		8.7	7.2	20.0	41.0			
Jan. 18			100.0	8.2	108.2			118.0	9.8		8.2	6.9	18.0	45.6			
Feb. 15			110.0	8.2	118.2			119.0	0.8		7.5	6.9	9.0	91.1			
Mar. 21			105.0	8.2	113.2			105.0		8.2	7.8	7.8					
Apr. 18			97.0	8.2	105.2			108.0	2.8		8.5	7.6	11.0	74.5			
May 16			92.0	8.2	100.2			110.8	10.6		8.9	7.4	18.8	43.6			

Digitized by Google

TABLE A66—Continued.

WHEAT, NO. 2 HARD WINTER, FROM KEARNEY TO OMAHA, NEBR.—Continued.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundred weight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12 (11—8)	13 (8—11)	14	15	16 (11—6)	17 (7÷16)	18	19	20
1915–16.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
June 20	.....	.....	92.0	8.2	100.2	.....	.....	97.0	.....	3.2	8.9	8.5	5.0	164.0	.....	.....	.....
July 18	.....	.....	99.0	8.2	107.2	.....	.....	109.0	1.8	.....	8.3	7.5	10.0	82.0	.....	.....	.....
Aug. 15	.....	.....	125.0	8.2	133.2	.....	.....	137.5	4.3	.....	6.6	6.0	12.5	65.6	.....	.....	.....
Sept. 19	.....	.....	135.0	8.2	143.2	.....	.....	147.5	4.3	.....	6.1	5.6	12.5	65.6	.....	.....	.....
Average	135.0	90.0	102.8	8.2	111.0	147.5	97.0	114.2	3.2	.....	8.0	7.2	11.4	71.9	186.3	13.6	1.46
1920–21.																	
Oct. 19	.....	.....	180.0	12.3	192.3	.....	.....	198.0	5.7	.....	6.8	6.2	18.0	68.3	.....	.....	.....
Nov. 16	.....	.....	162.0	12.3	174.3	.....	.....	183.0	8.7	.....	7.6	6.7	21.0	58.6	.....	.....	.....
Dec. 21	.....	.....	146.0	12.3	158.3	.....	.....	169.0	10.7	.....	8.4	7.3	23.0	53.5	.....	.....	.....
Jan. 18	.....	.....	150.0	12.3	162.3	.....	.....	173.0	10.7	.....	8.2	7.1	23.0	53.5	.....	.....	.....
Feb. 15	.....	.....	138.0	12.3	150.3	.....	.....	168.0	17.7	.....	8.9	7.3	30.0	41.0	.....	.....	.....
Mar. 15	.....	.....	129.0	13.5	142.5	.....	.....	149.0	6.5	.....	10.5	9.1	20.0	67.5	.....	.....	.....
Apr. 19	.....	.....	107.0	13.5	120.5	.....	.....	123.0	2.5	.....	12.6	11.0	16.0	84.4	.....	.....	.....
May 17	.....	.....	117.0	13.5	130.5	.....	.....	145.0	14.5	.....	11.5	9.8	28.0	48.2	.....	.....	.....
June 21	.....	.....	110.0	13.5	123.5	.....	.....	125.0	1.5	.....	12.3	10.8	15.0	90.0	.....	.....	.....
July 19	.....	.....	95.0	13.5	108.5	.....	.....	135.0	26.5	.....	14.2	12.0	40.0	33.8	.....	.....	.....
Aug. 16	.....	.....	93.0	13.5	106.5	.....	.....	117.0	10.5	.....	14.5	11.5	24.0	56.3	.....	.....	.....
Sept. 20	.....	.....	96.0	13.5	109.5	.....	.....	121.0	11.5	.....	14.1	11.2	25.0	54.0	.....	.....	.....
Average	130.0	93.0	126.9	13.0	139.9	198.0	117.0	150.5	10.6	.....	10.2	8.6	23.6	55.1	186.3	22.5	2.415

Digitized by Google

WHEAT, NO. 2 HARD WINTER, [illegible]

1912–13.																	
Oct. 17			76.0	8.0	84.0			90.0	6.0		10.5	8.9	14.0	57.1			
Nov. 21			68.0	8.0	76.0			81.5	5.5		11.8	9.8	13.5	59.3			
Dec. 19			70.0	8.0	78.0			83.0	5.0		11.4	9.6	13.0	61.5			
Jan. 23			80.0	8.0	88.0			88.5	.5		10.0	9.0	8.5	94.1			
Feb. 20			77.0	8.0	85.0			86.0	1.0		10.4	9.3	9.0	88.9			
Mar. 20			75.0	8.0	83.0			84.0	1.0		10.7	9.5	9.0	88.9			
Apr. 17			78.0	8.0	86.0			86.4	.4		10.3	9.3	8.4	95.2			
May 22			77.0	8.0	85.0			88.0	3.0		10.4	9.1	11.0	72.7			
June 19			82.0	8.0	90.0			88.0		2.0	9.8	9.1	6.0	133.3			
July 10			72.0	8.0	80.0			82.0	2.0		11.1	9.8	10.0	80.0			
Aug. 21			74.0	8.0	82.0			83.4	1.4		10.8	9.6	9.4	85.1			
Sept. 18			80.0	8.0	88.0			86.0		2.0	10.0	9.3	6.0	133.3			
Average	82.0	68.0	75.8	8.0	83.8	90.0	81.5	85.6	1.8		10.6	9.3	9.8	81.6	275.0	13.3	0.967
1915–16.																	
Oct. 19			102.0	8.0	110.0			108.0		2.0	7.8	7.4	6.0	133.3			
Nov. 16			95.0	8.0	103.0			107.0	4.0		8.4	7.5	12.0	66.7			
Dec. 21			100.0	8.0	108.0			115.3	7.3		8.0	6.9	15.3	52.3			
Jan. 18			107.0	8.0	115.0			118.0	3.0		7.5	6.8	11.0	72.7			
Feb. 17			112.0	8.0	120.0			116.7		3.3	7.1	6.9	4.7	170.2			
Mar. 23			110.0	8.0	118.0			104.0		14.0	7.3	7.7					
Apr. 18			101.0	8.0	109.0			110.0	1.0		7.9	7.3	9.0	88.9			
May 16			105.0	8.0	113.0			111.0		2.0	7.6	7.2	6.0	133.3			
June 20			92.0	8.0	100.0			104.0	4.0		8.7	7.7	12.0	66.7			
July 18			101.0	8.0	109.0			110.0	1.0		7.9	7.3	9.0	88.9			
Aug. 15			130.0	8.0	138.0			141.0	3.0		6.2	5.7	11.0	72.7			
Sept. 19			143.0	8.0	151.0			153.0	2.0		5.6	5.2	10.0	80.0			
Average	143.0	92.0	108.2	8.0	116.2	153.0	104.0	116.5	.3		7.4	6.9	8.3	96.4	275.0	13.3	.967
1920–21.																	
Oct. 19			197.0	13.5	210.5			206.0		4.5	6.9	6.6	9.0	150.0			
Nov. 16			159.0	13.5	172.5			185.0	12.5		8.5	7.3	26.0	51.9			
Dec. 21			149.0	13.5	162.5			170.0	7.5		9.1	7.9	21.0	64.3			
Jan. 18			154.0	13.5	167.5			175.0	7.5		8.8	7.7	21.0	64.3			
Feb. 15			149.0	13.5	162.5			170.0	7.5		9.1	7.9	21.0	64.3			
Mar. 15			134.0	13.5	147.5			151.0	3.5		10.1	8.9	17.0	79.4			
Apr. 19			107.0	13.5	120.5			125.0	4.5		12.6	10.8	18.0	75.0			
May 17 and 18			137.0	13.5	150.5			149.0		1.5	9.9	9.1	12.0	112.5			
June 21			99.0	13.5	112.5			128.0	15.5		13.6	10.5	29.0	46.6			
July 19			99.0	13.5	112.5			119.0	6.5		13.6	11.3	20.0	67.5			
Aug. 16			99.0	13.5	112.5			116.0	3.5		13.6	11.6	17.0	79.4			
Sept. 20			107.0	13.5	120.5			124.0	3.5		12.6	10.9	17.0	79.4			
Average	197.0	99.0	132.5	13.5	146.0	206.0	116.0	151.5	5.5		10.2	8.9	19.0	71.1	275.0	22.5	1.636

Digitized by Google

TABLE A66—Continued.

WHEAT, NO. 2 NORTHERN SPRING, FROM WARREN TO MINNEAPOLIS, MINN.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12 (11–8)	13 (8–11)	14	15	16 (11–6)	17 (7÷16)	18	19	20
1912-13.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
Oct. 15	.....	.....	76.0	6.6	82.6	89.1	86.1	87.6	5.0	.....	8.7	7.5	11.6	56.9	.....	.....	.....
Nov. 19	.....	.....	67.0	6.6	73.6	80.9	79.0	79.9	6.3	.....	9.9	8.3	12.9	51.2	.....	.....	.....
Dec. 17	.....	.....	67.0	6.6	73.6	80.6	79.1	79.9	6.3	.....	9.9	8.3	12.9	51.2	.....	.....	.....
Jan. 21	.....	.....	74.0	6.6	80.6	86.0	84.5	85.3	4.7	.....	8.9	7.7	11.3	58.4	.....	.....	.....
Feb. 18	.....	.....	74.0	6.6	80.6	85.6	84.1	84.9	4.3	.....	8.9	7.8	10.9	60.6	.....	.....	.....
Mar. 18	.....	.....	69.0	6.6	75.6	82.1	80.8	81.5	5.9	.....	9.6	8.1	12.5	52.8	.....	.....	.....
Apr. 15	.....	.....	72.0	6.6	78.6	85.0	83.5	84.3	5.7	.....	9.2	7.8	12.3	53.7	.....	.....	.....
May 20	.....	.....	77.0	6.6	83.6	89.1	88.1	88.6	5.0	.....	8.6	7.4	11.6	56.9	.....	.....	.....
June 17	.....	.....	80.0	6.6	86.6	91.1	90.1	90.6	4.0	.....	8.3	7.3	10.6	62.3	.....	.....	.....
July 15	.....	.....	77.0	6.6	83.6	87.9	87.0	87.5	3.9	.....	8.6	7.5	10.5	62.9	.....	.....	.....
Aug. 19	.....	.....	76.0	6.6	82.6	87.4	85.9	86.7	4.1	.....	8.7	7.6	10.7	61.7	.....	.....	.....
Sept. 16	.....	.....	76.0	6.6	82.6	86.9	84.6	85.8	3.2	.....	8.7	7.7	9.8	67.3	.....	.....	.....
Average	80.0	67.0	73.8	6.6	80.4	91.1	79.0	85.2	4.8	.....	8.9	7.7	11.5	57.9	310.0	11.0	0.710
1915-16.																	
Oct. 19	.....	.....	87.0	6.7	93.7	102.8	99.8	101.3	7.6	.....	7.7	6.6	14.3	46.9	.....	.....	.....
Nov. 16	.....	.....	87.0	6.7	93.7	102.3	97.8	100.1	6.4	.....	7.7	6.7	13.1	51.1	.....	.....	.....
Dec. 21	.....	.....	103.0	6.7	109.7	118.8	116.3	117.6	7.9	.....	6.5	5.7	14.6	45.9	.....	.....	.....
Jan. 18	.....	.....	115.0	6.7	121.7	130.8	127.3	129.6	7.9	.....	5.8	5.2	14.6	45.9	.....	.....	.....
Feb. 15	.....	.....	113.0	6.7	119.7	129.3	124.3	126.8	7.1	.....	5.9	5.3	13.8	48.6	.....	.....	.....
Mar. 21	.....	.....	95.0	6.7	101.7	110.9	107.9	109.4	7.7	.....	7.1	6.1	14.4	46.5	.....	.....	.....
Apr. 18	.....	.....	102.0	6.7	109.7	119.8	116.8	118.3	8.6	.....	6.5	5.7	15.3	43.8	.....	.....	.....

Digitized by Google

May 16																	
June 20			92.0	6.7	98.7	109.8	105.8	107.8	9.1		7.3	6.2	15.8	42.4			
July 18			100.0	6.7	106.7	116.5	112.5	114.5	7.8		6.7	5.9	14.5	46.2			
Aug. 15			134.0	6.7	140.7	151.8	147.8	149.8	9.1		5.0	4.5	15.8	42.4			
Sept. 19			143.0	6.7	149.7	160.8	156.8	158.8	9.1		4.7	4.2	15.8	42.4			
Average	143.0	87.0	106.4	6.7	113.1	160.8	97.8	121.2	8.1		6.3	5.5	14.8	45.3	310.0	11.1	.710
1920-21.																	
Oct. 19			181.0	11.4	192.4	211.0	206.0	208.5	16.1		6.3	5.5	27.5	41.5			
Nov. 16			152.0	11.4	163.4	179.5	174.5	177.0	13.6		7.5	6.4	25.0	45.6			
Dec. 21			137.0	11.4	148.4	164.0	161.0	162.5	14.1		8.3	7.9	25.5	44.7			
Jan. 18			149.0	11.4	160.4	176.8	171.8	174.3	13.9		7.7	6.5	25.3	45.1			
Feb. 15			146.0	11.4	157.4	172.9	167.9	170.4	13.0		7.8	6.7	24.4	46.7			
Mar. 15			129.0	11.4	140.4	154.9	149.9	152.4	12.0		8.8	7.5	23.4	48.7			
Apr. 19			100.0	11.4	111.4	133.1	123.1	128.1	16.7		11.4	8.9	28.1	40.6			
May 17			113.0	11.4	124.4	146.4	141.4	143.9	19.5		10.1	7.9	30.9	36.9			
June 21			112.0	11.4	123.4	143.4	138.4	140.9	17.5		10.2	8.1	28.9	39.4			
July 19			115.0	11.4	126.4	149.0	136.0	142.5	16.1		9.9	8.0	27.5	41.5			
Aug. 16			111.0	11.4	122.4	140.8	135.8	138.3	15.9		10.3	8.2	27.3	41.8			
Sept. 20			126.0	11.4	137.4	146.6	143.6	145.1	7.7		9.0	7.9	19.1	59.7			
Average	181.0	100.0	130.9	11.4	142.3	211.0	123.1	157.0	14.7		8.7	7.3	26.1	43.7	310.0	19.0	1.226

WHEAT, NO. 2 DARK NORTHERN SPRING, FROM MANSFIELD, S. DAK., TO CHICAGO, ILL.

1912-13.																	
Oct. 15			79.0	13.2	92.2			95.0	2.8		16.7	13.9	16.0	82.5			
Nov. 19			74.0	13.2	87.2			86.5		0.7	17.8	15.3	12.5	105.6			
Dec. 17			70.0	13.2	83.2			88.0	4.8		18.9	15.0	18.0	73.3			
Jan. 21			75.0	13.2	88.2			91.5	3.3		17.6	14.4	16.5	80.0			
Feb. 18			75.0	13.2	88.2			92.0	3.8		17.6	14.3	17.0	77.6			
Mar. 18			72.0	13.2	85.2			88.0	2.8		18.3	15.0	16.0	82.5			
Apr. 15			77.0	13.2	90.2			92.0	1.8		17.1	14.3	15.0	88.0			
May 20			79.0	13.2	92.2			92.5	0.3		16.7	14.3	13.5	97.8			
June 17			81.0	13.2	94.2			94.0		0.2	16.3	14.0	13.0	101.5			
July 15			79.0	13.2	92.2			91.5		0.7	16.7	14.4	12.5	105.6			
Aug. 19			76.0	13.2	89.2			95.0	5.8		17.4	13.9	19.0	69.5			
Sept. 16			76.0	13.2	89.2			92.5	3.3		17.4	14.3	16.5	80.0			
Average	81.0	70.0	76.1	13.2	89.3	95.0	86.5	91.5	2.2		17.3	14.4	15.4	85.7	689.9	22.0	0.638
1915-16.																	
Oct. 19			90.0	13.2	103.2			109.5	6.3		14.7	12.1	19.5	67.7			
Nov. 16			91.0	13.2	104.2			107.5	3.3		14.5	12.3	16.5	80.0			
Dec. 21			108.0	13.2	121.2			123.0	1.8		12.2	10.7	15.0	88.0			
Jan. 18			111.0	13.2	124.2			130.5	6.3		11.9	10.1	19.5	67.7			
Feb. 15			118.0	13.2	131.2			134.0	2.8		11.2	9.9	16.0	82.5			
Mar. 21			100.0	13.2	113.2			113.0		0.2	13.2	11.7	13.0	101.5			

Digitized by Google

TABLE A66—Continued.

WHEAT, NO. 2 DARK NORTHERN SPRING, FROM MANSFIELD, S. DAK., TO CHICAGO, ILL.—Continued.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12 (11—8)	13 (8—11)	14	15	16 (11—6)	17 (7÷16)	18	19	20
1915–16.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
Apr. 18	.....	.....	106.0	13.2	119.2	.....	.....	120.5	1.3	.....	12.5	11.0	14.5	91.0	.....	.....	.....
May 16	.....	.....	113.0	13.2	126.2	.....	.....	124.0	.....	2.2	11.7	10.6	11.0	120.0	.....	.....	.....
June 20	.....	.....	96.0	13.2	109.2	.....	.....	111.5	2.3	.....	13.8	11.8	15.5	85.2	.....	.....	.....
July 18	.....	.....	104.0	13.2	117.2	.....	.....	117.5	0.3	.....	12.7	11.2	18.5	97.8	.....	.....	.....
Aug. 15	.....	.....	132.0	13.2	145.2	.....	.....	196.5	50.8	.....	10.0	6.8	63.5	20.8	.....	.....	.....
Sept. 19	.....	.....	150.0	13.2	163.2	.....	.....	161.5	.....	1.7	8.8	8.2	11.5	114.8	.....	.....	.....
Average	150.0	90.0	109.9	13.2	123.1	195.5	107.5	129.0	5.9	.....	12.0	10.2	19.1	69.1	699.9	22.0	0.638
1920–21.																	
Oct. 19	.....	.....	191.0	22.2	213.2	.....	.....	216.0	2.8	.....	11.6	10.3	25.0	88.8	.....	.....	.....
Nov. 16	.....	.....	151.0	22.2	173.2	.....	.....	194.0	20.8	.....	14.7	11.4	43.0	51.6	.....	.....	.....
Dec. 21	.....	.....	150.0	23.7	173.7	.....	.....	173.0	.....	0.7	15.8	13.7	23.0	103.0	.....	.....	.....
Jan. 18	.....	.....	175.0	23.7	198.7	.....	.....	194.0	.....	4.7	13.5	12.2	19.0	124.7	.....	.....	.....
Feb. 15	.....	.....	155.0	23.7	178.7	.....	.....	139.5	.....	39.2	15.3	17.0	.....	.....	.....	.....	.....
Mar. 15	.....	.....	141.0	23.7	164.7	.....	.....	164.0	.....	0.7	16.8	14.3	23.0	103.0	.....	.....	.....
Apr. 19	.....	.....	119.0	23.7	142.7	.....	.....	144.0	1.3	.....	19.9	16.5	25.0	94.8	.....	.....	.....
May 17	.....	.....	126.0	23.7	149.7	.....	.....	144.0	.....	5.7	18.8	16.5	18.0	131.7	.....	.....	.....
June 21	.....	.....	123.0	23.7	146.7	.....	.....	159.0	12.3	.....	19.3	14.9	36.0	66.8	.....	.....	.....
July 19	.....	.....	135.0	23.7	158.7	.....	.....	150.0	.....	8.7	17.6	15.8	15.0	156.0	.....	.....	.....
Aug. 16	.....	.....	111.0	23.7	134.7	.....	.....	143.0	8.3	.....	21.4	16.6	32.0	74.1	.....	.....	.....
Sept. 20	.....	.....	130.0	23.7	153.7	.....	.....	150.0	.....	3.7	15.2	13.3	20.0	113.5	.....	.....	.....
Average	191.0	111.0	142.3	23.5	165.8	216.0	159.5	164.2	.....	1.6	16.5	14.3	21.9	107.3	699.9	30.0	1.131

Digitized by Google

1912–13.																	
Oct. 15			33.0	15.4	48.4			63.0	14.6		46.7	24.4	30.0	51.3			
Nov. 19			31.0	15.4	46.4			49.5	3.1		49.7	31.1	18.5	83.2			
Dec. 17			31.0	15.4	46.4			46.0		0.4	49.7	33.5	15.0	102.7			
Jan. 21			29.0	15.4	44.4			48.0	3.6		53.1	32.1	19.0	81.1			
Feb. 18			31.0	15.4	46.4			48.5	2.1		49.7	31.8	17.5	88.0			
Mar. 18			32.0	15.4	47.4			48.5	1.1		48.1	31.8	16.5	93.3			
Apr. 15			34.0	15.4	49.4			55.5	6.1		45.3	27.7	21.5	71.6			
May 20			38.0	15.4	53.4			58.5	5.1		40.5	26.3	20.5	75.1			
June 17			41.0	15.4	56.4			62.5	6.1		37.6	24.6	21.5	71.6			
July 15			43.0	15.4	58.4			61.5	3.1		35.8	25.0	18.5	83.2			
Aug. 19			52.0	15.4	67.4			77.0	9.6		29.6	20.0	25.0	61.6			
Sept. 16			53.0	15.4	68.4			74.0	5.6		29.1	20.8	21.0	73.3			
Average	53.0	29.0	37.3	15.4	52.7	77.0	46.0	57.7	5.0		41.3	26.7	20.4	75.5	753.1	27.5	0.73
1915–16.																	
Oct. 19			40.0	15.4	55.4			66.0	10.6		38.5	23.3	26.0	59.2			
Nov. 16			48.0	15.4	63.4			63.5	0.1		32.1	24.3	15.5	99.4			
Dec. 21			48.0	15.4	63.4			68.5	5.1		32.1	22.5	20.5	75.1			
Jan. 18			43.0	15.4	58.4			75.5	17.1		35.8	20.4	32.5	47.4			
Feb. 15			45.0	15.4	60.4			73.5	13.1		34.2	21.0	28.5	54.0			
Mar. 21			36.0	15.4	51.4			73.5	22.1		42.8	21.0	37.5	41.1			
Apr. 18			48.0	15.4	63.4			75.0	11.6		32.1	20.5	27.0	57.0			
May 16			56.0	15.4	71.4			78.0	1.6		27.5	21.1	17.0	90.6			
June 20			54.0	15.4	69.4			73.5	4.1		28.5	21.0	19.5	79.0			
July 18			56.0	15.4	71.4			80.0	8.6		27.5	19.3	24.0	64.2			
Aug. 15			65.0	15.4	80.4			86.0	5.6		23.7	17.9	21.0	73.0			
Sept. 19			50.0	15.4	65.4			84.0	18.6		30.8	18.3	34.0	45.3			
Average	65.0	36.0	49.1	15.4	64.5	86.0	63.5	74.3	9.8		31.4	20.7	25.2	61.1	753.1	27.5	.73
1920–21.																	
Oct. 19			54.0	27.2	81.2			87.5	6.3		50.4	31.1	33.5	81.2			
Nov. 16			40.0	27.2	67.2			81.0	13.8		68.0	33.6	41.0	66.3			
Dec. 21			40.0	28.6	68.6			72.5	3.9		71.5	39.4	32.5	88.0			
Jan. 18			35.0	28.6	63.6			64.0	0.4		81.7	44.7	29.0	98.6			
Feb. 15			27.0	28.6	55.6			65.5	9.9		105.9	43.7	38.5	74.3			
Mar. 15			30.0	28.6	58.6			62.5	3.9		95.3	45.8	32.5	88.0			
Apr. 19			25.0	28.6	53.6			55.0	1.4		114.4	52.0	30.0	95.3			
May 17			25.0	28.6	53.6			58.5	4.9		114.4	48.9	33.5	85.4			
June 21			25.0	28.6	53.6			61.5	7.9		114.4	46.5	36.5	78.4			
July 19			27.0	28.6	55.6			62.5	6.9		105.9	45.8	35.5	80.6			
Aug. 16			20.0	28.6	48.6			57.0	8.4		143.0	50.2	37.0	77.3			
Sept. 20			20.0	28.6	48.6			53.0	4.4		143.0	54.0	33.0	86.7			
Average	54.0	20.0	30.7	28.3	59.0	87.5	53.0	65.0	6.0		92.2	43.5	34.3	82.5	753.1	50.6	1.344

Digitized by Google

TABLE A66—Continued.

CORN, NO. 3 YELLOW, FROM PETERSBURG TO OMAHA, NEBR.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12 (11—8)	13 (8—11)	14	15	16 (11—6)	17 (7+16)	18	19	20
1912-13.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
Oct. 15			51.0	6.2	57.2			60.0	2.8		12.2	10.3	9.0	68.9			
Nov. 19			45.0	6.2	51.2			56.0	4.8		13.8	11.1	11.0	86.4			
Dec. 17			33.0	6.2	39.2			42.0	2.8		18.8	14.8	9.0	68.9			
Jan. 21			36.3	6.2	42.5			45.3	2.8		17.1	13.7	9.0	68.9			
Feb. 18			34.0	6.2	40.2			43.0	2.8		18.2	14.4	9.0	68.9			
Mar. 18			38.0	6.2	44.2			47.0	2.8		16.3	13.2	9.0	68.9			
Apr. 15			44.0	6.2	50.2			53.0	2.8		14.1	11.7	9.0	68.9			
May 20			45.0	6.2	51.2			56.0	4.8		13.8	11.1	11.0	86.4			
June 17			48.5	6.2	54.7			57.5	2.8		12.8	10.3	9.0	68.9			
July 15			49.5	6.2	55.7			58.5	2.8		12.5	10.6	9.0	68.9			
Aug. 19			63.8	6.2	70.0			72.8	2.8		9.7	8.5	9.0	68.9			
Sept. 16			62.8	6.2	69.0			71.8	2.8		9.9	8.6	9.0	68.9			
Average	63.8	33.0	45.9	6.2	52.1	72.8	42.0	55.2	3.1		13.5	11.2	9.3	66.7	152.9	11.1	1.452
1915-16.																	
Oct. 19			55.0	6.2	61.2			64.0	2.8		11.3	9.7	9.0	68.9			
Nov. 16			53.5	6.2	59.7			62.3	2.6		11.6	10.0	8.8	70.5			
Dec. 21			55.5	6.2	62.7			65.5	2.8		11.0	9.5	9.0	68.9			
Jan. 18			56.0	6.2	62.2			69.5	7.3		11.1	8.9	13.5	45.9			
Feb. 15			58.0	6.2	64.2			68.0	4.8		10.7	9.0	11.0	56.4			
Mar. 21			55.0	6.2	61.2			66.0	6.8		11.3	9.1	13.0	47.7			
Apr. 18			58.0	6.2	64.2			70.5	6.3		10.7	8.8	12.5	49.6			
May 16			59.0	6.2	65.2			71.0	5.8		10.5	8.7	12.0	51.7			
June 20			61.0	6.2	67.2			73.3	6.1		10.2	8.5	12.3	50.4			

Digitized by Google

July 18			66.0	6.2	72.2			79.0	6.8		9.4	7.8	13.0	47.7			
Aug. 15			68.0	6.2	74.2			80.0	5.8		9.1	7.8	12.0	51.7			
Sept. 19			67.0	6.2	73.2			79.5	6.3		9.3	7.8	12.5	49.6			
Average	68.0	53.5	59.4	6.2	65.6	80.0	62.3	71.0	5.4		10.4	8.7	11.6	53.4	152.9	11.1	1.492
1920-21.																	
Oct. 19			65.0	12.0	77.0			85.0	8.0		13.5	14.1	20.6	60.6			
Nov. 16			55.0	12.0	67.0			80.0	13.0		21.8	15.0	25.0	48.0			
Dec. 21			48.0	12.0	55.0			60.0	5.0		27.9	20.0	17.0	70.6			
Jan. 18			37.0	12.0	49.0			55.5	6.5		22.4	21.6	18.5	64.9			
Feb. 15			40.0	12.0	52.0			56.0	4.0		30.6	21.4	16.0	75.0			
Mar. 15			39.0	12.0	51.0			54.0	3.0		30.8	22.2	15.0	80.0			
Apr. 19			35.0	12.0	47.0			47.0			24.3	25.5	12.0	100.0			
May 17			32.0	12.0	44.0			52.5	8.5		37.5	22.9	20.5	58.5			
June 21			33.0	12.0	45.0			51.5	6.5		26.4	22.3	18.5	64.9			
July 19			33.0	12.0	45.0			51.0	6.0		26.4	23.5	18.0	66.7			
Aug. 16			28.0	12.0	40.0			45.0	5.0		42.9	28.7	17.0	70.6			
Sept. 20			30.0	12.0	42.0			43.0	1.0		40.0	27.9	13.0	92.3			
Average	65.0	26.0	39.2	12.0	51.2	85.0	43.0	56.7	5.5		30.6	21.2	17.5	68.6	152.9	21.5	2.812

CORN, NO. 2 YELLOW, FROM AKRON, IOWA, TO CHICAGO, ILL.

1912-13.																	
Oct. 15			55.0	9.5	64.5	64.0	63.8	63.9		0.6	17.3	14.9	8.9	106.7			
Nov. 19			38.0	9.5	47.5	55.0	54.5	54.8	7.3		25.0	17.3	16.8	56.5			
Dec. 17			34.0	9.5	43.5	48.5	48.0	48.3	4.8		27.9	19.7	14.3	66.4			
Jan. 21			37.0	9.5	46.5	49.5	49.0	49.3	2.8		25.7	19.3	12.3	77.2			
Feb. 18			39.5	9.5	49.0	50.0	49.5	49.8	0.8		24.1	19.1	10.3	92.2			
Mar. 18			37.0	9.5	46.5	50.5	50.0	50.3	3.8		25.7	18.9	13.3	71.4			
Apr. 15			41.0	9.5	50.5	56.0	55.5	55.8	5.3		23.2	17.0	14.8	64.2			
May 20			50.0	9.5	59.5	57.5	57.3	57.4		2.1	19.0	18.6	7.4	128.4			
June 17			49.0	9.5	58.5	62.5	62.3	62.4	3.9		19.4	15.2	13.4	70.9			
July 15			50.0	9.5	59.5	61.3	61.0	61.2	1.7		19.0	15.5	11.2	84.8			
Aug. 19			65.0	9.5	74.5			77.3	2.8		14.6	12.3	12.3	77.2			
Sept. 16			65.0	9.5	74.5	74.8	74.0	74.4		0.1	14.6	12.8	9.4	101.1			
Average	65.0	34.0	46.7	9.5	56.2	77.3	48.0	57.9	1.7		20.3	16.4	11.2	84.8	546.3	17.0	0.622
1915-16.																	
Oct. 19			55.0	9.5	64.5	66.0	65.5	65.8	1.3		17.3	14.4	10.8	88.0			
Nov. 16			54.0	9.5	63.5	64.0	62.0	63.0		0.5	17.6	15.1	9.0	105.6			
Dec. 21			53.0	9.5	62.5	72.0	72.0	72.0	9.5		17.9	13.2	19.0	50.0			
Jan. 18			50.0	9.5	59.5	76.8	76.3	76.6	17.1		19.0	12.4	26.6	35.7			
Feb. 15			50.0	9.5	59.5	77.3	77.0	77.2	17.7		19.0	12.3	27.2	34.9			
Mar. 21			50.0	9.5	59.5	76.0	73.8	74.9	15.4		19.0	12.7	24.9	38.2			
Apr. 18			56.0	9.5	65.5	78.5	76.5	77.5	12.0		17.0	12.3	21.5	44.2			

Digitized by Google

TABLE A66—Continued.

CORN, NO. 2 YELLOW, FROM AKRON, IOWA, TO CHICAGO, ILL.—Continued.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12(11—8)	13(8—11)	14	15	16(11—6)	17(7÷16)	18	19	20
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
May 16	.....	.....	45.0	9.5	54.5	75.8	75.3	75.6	21.1	.....	21.1	12.6	30.6	31.0	.....	.....	.....
June 20	.....	.....	62.0	9.5	71.5	74.5	74.0	74.3	2.8	.....	15.3	12.8	12.3	77.2	.....	.....	.....
July 18	.....	.....	71.0	9.5	80.5	80.8	80.5	80.7	0.2	.....	13.4	11.8	9.7	97.9	.....	.....	.....
Aug. 15	.....	.....	75.0	9.5	84.5	86.8	86.3	86.6	2.1	.....	12.7	11.0	11.6	81.9	.....	.....	.....
Sept. 19	.....	.....	72.0	9.5	81.5	86.8	86.5	86.7	5.2	.....	13.2	11.0	14.7	64.6	.....	.....	.....
Average	75.0	45.0	57.8	9.5	67.3	86.8	62.0	75.9	8.6	.....	16.4	12.5	18.1	52.5	546.3	17.0	0.622
1920-21.																	
Oct. 19	.....	.....	70.0	17.1	87.1	91.5	89.0	90.3	3.2	.....	24.4	18.9	20.3	84.2	.....	.....	.....
Nov. 16	.....	.....	65.0	17.1	82.1	88.5	84.0	86.3	4.2	.....	26.3	19.8	21.3	80.3	.....	.....	.....
Dec. 21	.....	.....	49.0	17.1	66.1	80.0	72.5	76.3	10.2	.....	34.9	22.4	27.3	62.6	.....	.....	.....
Jan. 18	.....	.....	45.0	17.1	62.1	.....	.....	67.0	4.9	.....	38.0	25.5	22.0	77.7	.....	.....	.....
Feb. 15	.....	.....	44.0	17.1	61.1	70.5	70.0	70.3	9.2	.....	38.9	24.3	26.3	65.0	.....	.....	.....
Mar. 15	.....	.....	41.0	17.1	58.1	.....	.....	65.0	6.9	.....	41.7	26.3	24.0	71.3	.....	.....	.....
Apr. 19	.....	.....	33.0	17.1	50.1	56.8	56.5	56.7	6.6	.....	51.8	30.2	23.7	72.2	.....	.....	.....
May 17	.....	.....	37.0	17.1	54.1	.....	.....	60.0	5.9	.....	46.2	28.5	23.0	74.3	.....	.....	.....
June 21	.....	.....	42.0	17.1	59.1	62.3	61.8	62.1	3.0	.....	40.7	27.5	20.1	85.1	.....	.....	.....
July 19	.....	.....	40.0	17.1	57.1	63.8	62.8	63.3	6.2	.....	42.8	27.0	23.3	73.4	.....	.....	.....
Aug. 16	.....	.....	38.0	17.1	55.1	58.5	57.0	57.8	2.7	.....	45.0	29.6	19.8	86.4	.....	.....	.....
Sept. 20	.....	.....	33.0	17.1	50.1	53.8	53.5	53.7	3.6	.....	51.8	31.8	20.7	82.6	.....	.....	.....
Average	70.0	33.0	44.8	17.1	61.9	91.5	53.5	67.8	5.9	.....	38.2	25.2	23.0	74.3	546.3	30.5	1.117

Digitized by Google

1912-13.																
Oct. 15			72.0	4.5	76.5	63.8	63.3	63.6		12.9	6.3	7.1				
Nov. 19			45.0	4.5	49.5	56.5	47.0	51.8	2.3		10.0	8.7	6.8	66.2		
Dec. 17			39.0	4.5	43.5	46.5	45.5	46.0	2.5		11.5	9.8	7.0	64.3		
Jan. 21			42.5	4.5	47.0	49.0	47.5	48.3	1.3		10.6	9.3	5.8	77.6		
Feb. 18			42.5	4.5	47.0	49.3	47.8	48.6	1.6		10.6	9.3	6.1	73.8		
Mar. 18			43.0	4.5	47.5	49.8	47.8	48.8	1.3		10.5	9.2	5.8	77.6		
Apr. 15			49.5	4.5	54.0	55.3	54.8	55.1	1.1		9.1	8.2	5.6	80.4		
May 20			52.0	4.5	56.5			57.0	.5		8.7	7.9	5.0	90.0		
June 17			56.0	4.5	60.5	63.3	62.5	62.9	2.4		8.0	7.2	6.9	65.2		
July 15			53.0	4.5	57.5	61.8	61.0	61.4	3.9		8.5	7.8	8.4	53.6		
Aug. 19			70.0	4.5	74.5			77.0	2.5		6.4	5.8	7.0	64.3		
Sept. 16			69.0	4.5	73.5	74.8	73.8	74.3	.8		6.5	6.1	5.3	84.9		
Average	72.0	39.0	52.8	4.5	57.3	74.8	47.0	57.0		.2	8.5	7.9	4.3	104.7	163.0	8.0	0.982
1915-16.																
Oct. 19			61.0	4.8	65.8			67.5	1.7		7.9	7.1	6.5	73.8		
Nov. 16			60.0	4.8	64.8	65.8	65.0	65.4	.6		8.0	7.3	5.4	88.9		
Dec. 21			61.0	4.8	65.8	68.8	68.5	68.7	2.9		7.9	7.0	7.7	62.3		
Jan. 18			68.0	4.8	72.8			75.8	3.0		7.1	6.3	7.8	61.5		
Feb. 15			63.5	4.8	68.3			77.0	8.7		7.6	6.2	13.5	35.6		
Mar. 21			63.0	4.8	67.8	76.0	73.0	74.5	6.7		7.6	6.4	11.5	41.7		
Apr. 18			68.5	4.8	73.3			75.3	2.0		7.0	6.4	6.8	70.6		
May 16			67.0	4.8	71.8			74.8	3.0		7.2	6.4	7.8	61.5		
June 20			68.0	4.8	72.8			75.3	2.5		7.1	6.4	7.3	65.8		
July 18			74.0	4.8	78.8	81.3	80.0	80.7	1.9		6.5	5.9	6.7	71.6		
Aug. 15			78.5	4.8	83.3	86.5	86.0	86.3	3.0		6.1	5.6	7.8	61.5		
Sept. 19			78.5	4.8	83.3	86.0	85.8	85.9	2.6		6.1	5.6	7.4	64.9		
Average	78.5	60.0	67.6	4.8	72.4	86.5	65.0	76.0	3.6		7.1	6.3	8.4	57.1	163.0	8.5	1.043
1920-21.																
Oct. 19			85.0	8.1	93.1			88.5		4.6	9.5	9.2	3.5	281.4		
Nov. 16			70.0	8.1	78.1			81.0	2.9		11.6	10.0	11.0	73.6		
Dec. 21			58.0	8.1	66.1	75.5	74.0	74.8	8.7		14.0	10.8	16.8	48.2		
Jan. 18			52.0	8.1	60.1	65.5	64.8	64.7	4.6		15.6	12.5	12.7	63.8		
Feb. 15			53.0	8.1	61.1	68.3	65.3	66.8	5.7		15.3	12.1	13.8	58.7		
Mar. 10			50.0	8.1	58.1	63.3	62.0	62.7	4.6		16.2	12.9	12.7	63.8		
Apr. 19			45.0	8.1	53.1	56.0	54.0	55.0	1.9		18.0	14.7	10.0	81.0		
May 17			50.0	8.1	58.1	60.0	59.5	59.8	1.7		16.2	13.5	9.8	82.7		
June 21			51.0	8.1	59.1	62.0	61.5	61.8	2.7		15.9	13.1	10.8	75.0		
July 19			52.0	8.1	60.1			62.5	2.4		15.6	13.0	10.5	77.1		
Aug. 16			48.0	8.1	56.1			58.0	1.9		16.9	14.0	10.0	81.0		
Sept. 20			43.0	8.1	51.1	53.8	53.3	53.6	2.5		18.8	15.1	10.6	76.4		
Average	85.0	43.0	54.8	8.1	62.9	88.5	53.3	64.4	1.5		14.8	12.6	9.6	84.4	163.0	14.5	1.779

Digitized for FRASER http://fraser.stlouisfed.org/ Federal Reserve Bank of St. Louis

TABLE A66—Continued.

CORN, NO. 3 MIXED, FROM DALLAS, S. DAK., TO MINNEAPOLIS, MINN.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12(11—8)	13(8—11)	14	15	16(11—6)	17(7+16)	18	19	20
1912–13.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
Oct. 15	.....	.....	34.0	14.3	48.3	.....	.....	65.5	17.2	.....	42.1	21.8	31.5	45.4	.....	.....	.....
Nov. 19	.....	.....	32.0	14.3	46.3	.....	.....	45.5	.....	0.8	44.7	31.4	13.5	105.9	.....	.....	.....
Dec. 17	.....	.....	32.0	14.3	46.3	.....	.....	41.5	.....	4.8	44.7	34.5	9.5	150.5	.....	.....	.....
Jan. 21	.....	.....	30.0	14.3	44.3	.....	.....	43.5	.....	0.8	47.7	32.9	13.5	105.9	.....	.....	.....
Feb. 18	.....	.....	32.0	14.3	46.3	.....	.....	45.5	.....	0.8	44.7	31.4	13.5	105.9	.....	.....	.....
Mar. 18	.....	.....	33.0	14.3	47.3	.....	.....	46.0	.....	1.3	43.3	31.1	13.0	110.0	.....	.....	.....
Apr. 15	.....	.....	35.0	14.3	49.3	.....	.....	53.0	3.7	.....	40.9	27.0	18.0	79.4	.....	.....	.....
May 20	.....	.....	40.0	14.3	54.3	.....	.....	60.5	6.2	.....	35.8	23.6	20.5	69.8	.....	.....	.....
June 17	.....	.....	43.0	14.3	57.3	.....	.....	59.5	2.2	.....	33.3	24.0	16.5	86.7	.....	.....	.....
July 15	.....	.....	45.0	14.3	59.3	.....	.....	57.5	.....	1.8	31.8	24.9	12.5	114.4	.....	.....	.....
Aug. 19	.....	.....	53.0	14.3	67.3	.....	.....	75.0	7.7	.....	27.0	19.1	22.0	65.0	.....	.....	.....
Sept. 16	.....	.....	55.0	14.3	69.3	.....	.....	70.0	0.7	.....	26.0	20.4	15.0	95.3	.....	.....	.....
Average	55.0	30.0	38.7	14.3	53.0	75.0	41.5	55.3	2.3	.....	37.0	25.9	16.6	86.1	487.3	25.5	1.047
1915–16.																	
Oct. 19	.....	.....	42.0	14.3	56.3	.....	.....	67.5	11.2	.....	34.0	21.2	25.5	56.1	.....	.....	.....
Nov. 16	.....	.....	50.0	14.3	64.3	.....	.....	69.5	5.2	.....	28.6	20.6	19.5	73.3	.....	.....	.....
Dec. 21	.....	.....	50.0	14.3	64.3	.....	.....	72.5	8.2	.....	28.6	19.7	22.5	63.6	.....	.....	.....
Jan. 18	.....	.....	45.0	14.3	59.3	.....	.....	77.0	17.7	.....	31.8	18.6	32.0	44.7	.....	.....	.....
Feb. 15	.....	.....	47.0	14.3	61.3	.....	.....	76.5	15.2	.....	30.4	18.7	29.5	48.5	.....	.....	.....
Mar. 21	.....	.....	38.0	14.3	52.3	.....	.....	75.5	23.2	.....	37.6	18.9	37.5	38.1	.....	.....	.....
Apr. 18	.....	.....	50.0	14.3	64.3	.....	.....	77.5	13.2	.....	28.6	18.5	27.5	52.0	.....	.....	.....
May 16	.....	.....	58.0	14.3	72.3	.....	.....	77.0	4.7	.....	24.7	18.6	19.0	75.3	.....	.....	.....
June 20	.....	.....	55.0	14.3	69.3	.....	.....	74.0	4.7	.....	26.0	19.3	19.0	75.3	.....	.....	.....

Digitized by Google

July 18			58.0	14.3	72.3			83.0	10.7		24.7	17.2	25.0	57.2			
Aug. 16			52.0	14.3	66.3			82.5	16.2		27.5	17.3	30.5	46.9			
Sept. 19			55.0	14.3	69.3			81.5	12.2		26.0	17.5	26.5	54.0			
Average	58.0	38.0	50.0	14.3	64.3	83.0	67.5	76.2	11.9		28.6	18.8	26.2	54.6	487.3	25.5	1.047
1920-21.																	
Oct. 19			57.0	24.9	81.9			87.5	5.6		43.7	28.5	30.5	81.6			
Nov. 16			46.0	24.9	70.9			89.0	18.1		54.1	28.0	43.0	57.9			
Dec. 21			38.0	24.9	62.9			66.0	3.1		65.5	37.7	28.0	88.9			
Jan. 18			33.0	24.9	57.9			57.5		0.4	75.5	43.3	24.5	101.6			
Feb. 15			32.0	24.9	56.9			80.5	2.6		77.8	41.8	27.5	90.5			
Mar. 15			34.0	24.9	58.9			54.5		4.4	78.2	45.7	20.5	121.5			
Apr. 19			28.0	24.9	52.9			48.5		4.4	88.9	51.3	20.5	121.5			
May 17			30.0	24.9	54.9			50.5		4.4	93.0	49.3	20.5	121.5			
June 21			28.0	24.9	52.9			51.5		1.4	88.9	48.3	23.5	106.0			
July 19			25.0	24.9	49.9			53.5	3.6		99.6	44.5	28.5	87.4			
Aug. 16			28.0	24.9	52.9			48.5		4.4	88.9	51.3	20.5	121.5			
Sept. 20			22.0	24.9	46.9			45.5		1.4	113.2	54.7	28.5	106.0			
Average	57.0	22.0	33.4	24.9	58.3	89.0	45.5	59.3	1.0		74.6	42.0	25.9	96.1	487.3	44.5	1.826

OATS, NO. 3 WHITE, FROM McINTOSH TO MINNEAPOLIS, MINN.

1912-13.																	
Oct. 15			23.0	3.5	26.5	31.5	30.5	31.0	4.5		15.2	11.3	8.0	43.8			
Nov. 19			21.0	3.5	24.5	29.3	29.0	29.2	4.7		16.7	12.0	8.2	42.7			
Dec. 17			22.0	3.5	25.5	30.5	30.3	30.4	4.9		15.9	11.5	8.4	41.7			
Jan. 21			22.0	3.5	25.5	31.0	30.8	30.9	4.5		15.9	11.3	8.9	39.3			
Feb. 18			23.0	3.5	26.5	31.0	30.5	30.8	4.3		15.2	11.4	7.8	44.9			
Mar. 18			20.0	3.5	23.5	29.0	28.5	28.8	5.3		17.5	12.2	8.8	39.8			
Apr. 15			25.0	3.5	28.5	31.0	31.3	31.2	2.7		14.0	11.2	6.2	56.5			
May 20			29.0	3.5	32.5	35.5	35.0	35.3	2.8		12.1	9.9	6.3	55.6			
June 17			33.0	3.5	36.5	39.5	39.0	39.3	2.8		10.6	8.9	6.6	53.0			
July 15			29.0	3.5	32.5	36.0	35.5	35.8	3.3		12.1	9.8	6.8	51.5			
Aug. 19			35.0	3.5	38.5	40.8	40.3	40.6	2.1		10.0	8.6	5.6	62.5			
Sept. 16			34.0	3.0	37.0	39.8	39.5	39.7	2.7		18.8	7.6	5.7	52.6			
Average	35.0	20.0	26.3	3.5	29.8	40.8	28.5	33.5	3.7		13.3	10.4	7.2	48.6	315.0	10.9	0.692
1915-16.																	
Oct. 19			27.0	3.3	30.3	34.5	33.8	34.2	3.9		12.2	9.6	7.2	45.8			
Nov. 16			26.0	3.3	29.3	34.5	34.0	34.3	5.0		12.7	9.6	8.3	39.8			
Dec. 21			32.0	3.3	35.3	40.5	40.0	40.3	5.0		10.3	8.2	8.3	39.8			
Jan. 18			42.0	3.3	45.3	49.5	49.0	49.3	4.0		7.9	6.7	7.3	45.2			
Feb. 15			38.0	3.3	41.3	45.8	45.3	45.6	4.3		8.7	7.2	7.6	43.4			
Mar. 21			34.0	3.3	37.3	41.8	41.5	41.7	4.4		9.7	7.9	7.7	42.9			
Apr. 18			36.5	3.3	39.8	43.3	43.0	43.2	3.4		9.0	7.6	6.7	49.3			

Digitized by Google

TABLE A66—Continued.

OATS, NO. 3 WHITE, FROM McINTOSH TO MINNEAPOLIS, MINN.—Continued.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12(11—8)	13(8—11)	14	15	16(11—6)	17(7+16)	18	19	20
1915-16.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
May 16	.....	.....	35.0	3.3	38.3	42.8	42.3	42.6	4.3	.....	9.4	7.7	7.6	43.4	.....	.....	.....
June 20	.....	.....	30.0	3.3	33.3	38.8	38.3	38.6	5.3	.....	11.0	8.5	8.6	38.4	.....	.....	.....
July 18	.....	.....	32.0	3.3	35.3	39.0	38.8	38.9	3.6	.....	10.3	8.5	6.9	47.8	.....	.....	.....
Aug. 15	.....	.....	35.0	3.3	38.3	42.8	41.8	42.3	4.0	.....	9.4	7.8	7.3	45.2	.....	.....	.....
Sept. 10	.....	.....	37.0	3.3	40.3	44.0	43.5	43.8	3.5	.....	8.9	7.5	6.8	48.5	.....	.....	.....
Average	42.0	26.0	33.7	3.3	37.0	49.5	33.8	41.2	4.2	.....	9.8	8.0	7.5	44.0	315.0	10.3	.654
1920-21.																	
Oct. 19	.....	.....	39.0	6.1	45.1	50.3	40.8	45.6	0.5	.....	15.6	13.4	6.6	92.4	.....	.....	.....
Nov. 16	.....	.....	34.0	6.1	40.1	45.6	45.1	45.4	5.3	.....	17.9	13.4	11.4	53.5	.....	.....	.....
Dec. 21	.....	.....	32.0	6.1	38.1	44.1	43.6	43.9	5.8	.....	19.1	13.9	11.9	51.3	.....	.....	.....
Jan. 18	.....	.....	28.0	6.1	34.1	39.4	38.9	39.2	5.1	.....	21.8	15.6	11.2	54.5	.....	.....	.....
Feb. 15	.....	.....	30.0	6.1	36.1	41.6	41.1	41.4	5.3	.....	20.3	14.7	11.4	53.5	.....	.....	.....
Mar. 15	.....	.....	27.0	6.1	33.1	38.0	37.3	37.7	4.6	.....	22.6	16.2	10.7	57.0	.....	.....	.....
Apr. 19	.....	.....	21.0	6.1	27.1	32.1	31.1	31.6	4.5	.....	29.0	19.3	10.6	57.5	.....	.....	.....
May 17	.....	.....	22.0	6.1	28.1	34.1	33.1	33.6	5.5	.....	27.7	18.2	11.6	52.6	.....	.....	.....
June 21	.....	.....	24.0	6.1	30.1	34.4	34.1	34.3	4.2	.....	25.4	17.8	10.3	59.2	.....	.....	.....
July 19	.....	.....	26.0	6.1	32.1	37.0	36.5	36.8	4.7	.....	23.5	16.6	10.8	56.5	.....	.....	.....
Aug. 16	.....	.....	18.0	6.1	24.1	28.8	28.0	28.4	4.3	.....	33.9	21.5	10.4	58.7	.....	.....	.....
Sept. 20	.....	.....	22.0	6.1	28.1	32.9	32.4	32.6	4.5	.....	27.7	18.7	10.6	57.5	.....	.....	.....
Average	39.0	18.0	26.9	6.1	33.0	50.3	28.0	37.5	4.5	.....	22.7	16.3	10.6	57.5	315.0	19.0	1.206

Digitized by Google

1912-13.																
Oct. 15			27.0	3.6	30.6			28.5	2.9		13.3	10.7	6.5	55.4		
Nov. 19			27.0	3.6	30.6			31.5	.9		13.3	11.4	4.5	80.0		
Dec. 17			27.0	3.6	30.6			33.0	2.4		13.3	10.9	6.0	60.0		
Jan. 21			35.0	3.6	38.6			33.0		5.6	10.3	10.9				
Feb. 18			29.0	3.6	32.6			32.5		.1	12.4	11.1	3.5	102.9		
Mar. 18			29.0	3.6	32.6			33.0		.6	12.4	11.3	3.0	120.0		
Apr. 15			29.0	3.6	32.6			34.5	1.9		12.4	10.4	5.5	65.5		
May 20			32.0	3.6	35.6			39.0	3.4		11.3	9.2	7.0	51.4		
June 17			37.0	3.6	40.6			41.0	.4		9.7	8.8	4.0	90.0		
July 15			35.0	3.6	38.6			39.0	.4		10.3	9.2	4.0	90.0		
Aug. 19			36.0	3.6	39.6			42.5	2.9		10.0	8.5	6.5	55.4		
Sept. 16			38.0	3.6	41.6			42.5	.9		9.5	8.5	4.5	80.0		
Average	38.0	27.0	31.8	3.6	35.4	42.5	31.5	36.2	.8		11.3	9.9	4.4	81.8	253.4	11.1	0.876
1915-16.																
Oct. 19			31.0	3.6	34.6			36.0	3.4		11.6	9.5	7.0	51.4		
Nov. 16			30.0	3.6	33.6			37.5	3.9		12.0	9.6	7.5	48.0		
Dec. 21			36.0	3.6	39.6			41.0	1.4		10.0	8.8	5.0	72.0		
Jan. 18			42.0	3.6	45.6			50.5	4.9		8.6	7.1	8.5	42.4		
Feb. 15			41.0	3.6	44.6			47.0	2.4		8.8	7.7	6.0	60.0		
Mar. 21			37.0	3.6	40.6			44.5	3.9		9.7	8.1	7.5	48.0		
Apr. 18			38.0	3.6	41.6			43.5	2.9		9.5	7.9	7.5	48.0		
May 16			40.0	3.6	43.6			44.5	0.9		9.0	8.1	4.5	80.0		
June 20			34.0	3.6	37.6			39.0	1.4		10.6	9.2	5.0	72.0		
July 18			34.0	3.6	37.6			41.0	3.4		10.6	8.8	7.0	51.4		
Aug. 15			37.0	3.6	40.6			42.5	1.9		9.7	8.5	5.5	65.5		
Sept. 19			38.0	3.6	41.6			45.5	3.9		9.5	7.9	7.5	48.0		
Average	42.0	30.0	36.5	3.6	40.1	50.5	37.5	43.0	2.9		9.9	8.4	6.5	55.4	253.4	11.1	.876
1920-21.																
Oct. 19			42.0	7.2	49.2			53.0	3.8		17.1	13.6	11.0	65.5		
Nov. 16			40.0	7.2	47.2			50.5	3.3		18.0	14.3	10.5	68.6		
Dec. 21			38.0	7.2	45.2			48.5	3.3		18.9	14.8	10.5	68.6		
Jan. 18			36.0	7.2	43.2			43.5	0.3		20.0	16.6	7.5	96.0		
Feb. 15			34.0	7.2	41.2			43.5	2.3		21.2	16.6	9.5	75.8		
Mar. 15			33.0	7.2	40.2			40.5	0.3		21.8	17.8	7.5	96.0		
Apr. 19			26.0	7.2	33.2			36.0	2.8		27.7	20.0	10.0	72.0		
May 17			27.0	7.2	34.2			36.5	2.3		26.7	19.7	9.5	75.8		
June 21			27.0	7.2	34.2			37.0	2.8		26.7	19.5	10.0	72.0		
July 19			28.0	7.2	35.2			38.0	2.8		25.7	18.9	10.0	72.0		
Aug. 16			20.0	7.2	27.2			31.5	4.3		36.0	22.9	11.5	62.6		
Sept. 20			25.0	7.2	32.2			36.0	3.8		28.8	20.0	11.0	65.5		
Average	42.0	20.0	31.3	7.2	38.5	53.0	31.5	41.2	2.7		23.0	17.5	9.9	72.7	253.4	22.5	1.776

Digitized by Google

TABLE A66—Continued.

BARLEY, NO. 4, FROM BIRD ISLAND TO MINNEAPOLIS, MINN.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12(11—8)	13(8—11)	14	15	16(11—6)	17(7+16)	18	19	20
1912-13.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
Oct. 15	.....	.....	45.0	4.1	49.1	66.0	43.0	54.5	5.4	.....	9.1	7.5	9.5	43.2	.....	.....	.....
Nov. 19	.....	.....	40.0	4.1	44.1	59.0	40.0	49.5	5.4	.....	10.3	8.3	9.5	43.2	.....	.....	.....
Dec. 17	.....	.....	41.0	4.1	45.1	59.0	41.0	50.0	4.9	.....	10.0	8.2	9.0	45.6	.....	.....	.....
Jan. 21	.....	.....	45.0	4.1	49.1	60.0	46.0	53.0	3.9	.....	9.1	7.7	8.0	51.3	.....	.....	.....
Feb. 18	.....	.....	43.0	4.1	47.1	57.0	43.0	50.0	2.9	.....	9.5	8.2	7.0	58.6	.....	.....	.....
Mar. 18	.....	.....	41.0	4.1	45.1	56.0	41.0	48.5	3.4	.....	10.0	8.5	7.5	54.7	.....	.....	.....
Apr. 15	.....	.....	40.0	4.1	44.1	57.0	41.0	49.0	4.9	.....	10.3	8.4	9.0	45.6	.....	.....	.....
May 20	.....	.....	43.0	4.1	47.1	60.0	45.0	52.5	5.4	.....	9.5	7.8	9.5	43.2	.....	.....	.....
June 17	.....	.....	42.0	4.1	46.1	59.0	46.0	52.5	6.4	.....	9.8	7.8	10.5	39.0	.....	.....	.....
July 15	.....	.....	43.0	4.1	47.1	54.0	42.0	48.0	0.9	.....	9.5	8.5	5.0	82.0	.....	.....	.....
Aug. 19	.....	.....	54.0	3.1	57.1	67.0	53.0	60.0	2.9	.....	5.7	5.2	6.0	51.7	.....	.....	.....
Sept. 16	.....	.....	54.0	3.1	57.1	71.0	55.0	63.0	5.9	.....	5.7	4.9	9.0	34.4	.....	.....	.....
Average	54.0	40.0	44.3	3.9	48.2	71.0	40.0	52.5	4.3	.....	8.8	7.4	8.2	47.6	.....	.....	.....
1915-16.																	
Oct. 19	.....	.....	44.0	3.3	47.3	86.0	49.0	52.5	5.2	.....	7.5	6.3	8.5	38.8	.....	.....	.....
Nov. 16	.....	.....	45.0	3.3	48.3	59.0	53.0	56.0	7.7	.....	7.3	5.9	11.0	30.0	.....	.....	.....
Dec. 21	.....	.....	44.0	3.3	47.3	61.5	56.0	58.8	11.5	.....	7.5	5.6	14.8	22.3	.....	.....	.....
Jan. 18	.....	.....	62.0	3.3	65.3	76.0	68.0	72.0	6.7	.....	5.3	4.6	10.0	33.0	.....	.....	.....
Feb. 15	.....	.....	60.0	3.3	63.3	73.5	65.0	71.3	8.0	.....	5.5	4.6	11.3	29.3	.....	.....	.....
Mar. 21	.....	.....	58.0	3.3	61.3	70.0	65.0	67.5	6.2	.....	5.7	4.9	9.5	34.7	.....	.....	.....
Apr. 18	.....	.....	60.0	3.3	63.3	72.0	62.0	67.0	3.7	.....	5.5	4.9	7.0	47.1	.....	.....	.....
May 16	.....	.....	62.0	3.3	65.3	74.0	66.0	70.0	4.7	.....	5.3	4.7	8.0	41.3	.....	.....	.....
June 20	.....	.....	57.0	3.3	60.3	72.0	62.0	67.0	6.7	.....	5.8	4.9	10.0	33.0	.....	.....	.....
July 18	.....	.....	60.0	3.3	63.3	70.5	62.0	66.3	3.0	.....	5.5	5.0	6.3	52.4	.....	.....	.....

Digitized by Google

Aug. 15			65.0	3.3	68.3	95.0	71.0	83.0	14.7		5.1	3.9	19.0	17.4			
Sept. 19			65.0	3.3	68.3	105.0	63.0	84.0	15.7		5.1	3.9	19.0	17.4			
Average	65.0	44.0	56.8	3.3	60.1	105.0	49.0	67.8	7.7		5.8	4.9	11.0	30.0			
1920–21.																	
Oct. 19			69.0	6.2	75.2	95.0	74.0	84.5	9.3		9.0	7.3	15.5	40.0			
Nov. 16			67.0	6.2	73.2	90.0	66.0	78.0	4.8		9.3	7.9	11.0	56.4			
Dec. 21			50.0	6.2	56.2	76.0	52.0	64.0	7.8		12.4	9.7	14.0	44.3			
Jan. 18			50.0	6.2	56.2	74.0	53.0	63.5	7.3		12.4	9.8	13.5	45.9			
Feb. 15			42.0	6.2	48.2	67.0	48.0	57.5	9.3		14.8	10.8	15.5	40.0			
Mar. 15			46.0	6.2	52.2	67.0	47.0	57.0	4.8		13.5	10.9	11.0	56.4			
Apr. 19			43.0	6.2	49.2	62.0	43.0	52.5	3.3		14.4	11.8	9.5	65.3			
May 17			43.0	6.2	49.2	59.0	45.0	52.0	2.8		14.4	11.9	9.0	68.9			
June 21			42.0	6.2	48.2	61.0	45.0	53.0	4.8		14.8	11.7	11.0	56.4			
July 19			36.0	6.2	42.2	65.0	47.0	56.0	13.8		17.2	11.1	20.0	31.0			
Aug. 16			38.0	6.2	44.2	61.0	40.0	50.5	6.3		16.3	12.3	12.5	49.6			
Sept. 20			40.0	6.2	46.2	58.0	42.0	50.0	3.8		15.5	12.4	10.0	62.0			
Average	69.0	36.0	47.2	6.2	53.4	95.0	40.0	59.9	6.5		13.1	10.4	12.7	48.8			

BARLEY, NO. 2, FROM GLEN TO MINNEAPOLIS, MINN.

1912–13.																	
Oct. 15			40.0	5.3	45.3	66.0	43.0	54.5	9.2		13.3	9.7	14.5	36.6			
Nov. 16			35.0	5.3	40.3	59.0	40.0	49.5	9.2		15.1	10.7	14.5	36.6			
Dec. 21			34.0	5.3	39.3	60.0	42.0	51.0	11.7		15.6	10.4	17.0	31.2			
Jan. 18			39.0	5.3	44.3	61.0	47.0	54.0	9.7		13.6	9.8	15.0	35.3			
Feb. 18			36.0	5.3	41.3	57.0	43.0	50.0	8.7		14.7	10.6	14.0	37.9			
Mar. 17			34.0	5.3	39.3	56.0	41.0	48.5	9.2		15.6	10.9	14.5	36.6			
Apr. 15			35.0	5.3	40.3	57.0	41.0	49.0	8.7		15.1	10.8	14.0	37.9			
May 20			41.0	5.3	46.3	60.0	45.0	52.5	6.2		12.9	10.1	11.5	46.1			
June 14			39.0	5.3	44.3	59.0	47.0	53.0	8.7		13.6	9.8	14.0	37.9			
July 15			38.0	5.3	43.3	55.0	43.0	49.0	5.7		13.9	10.8	11.0	48.2			
Aug. 20			51.0	4.2	55.2	67.0	54.0	60.5	5.3		8.2	6.9	9.5	44.2			
Sept. 16			54.0	4.2	58.2	71.0	55.0	63.0	4.8		7.8	6.7	9.0	46.7			
Average	54.0	34.0	39.7	5.1	44.8	71.0	40.0	52.9	8.1		12.8	9.6	13.2	38.6			
1915–16.																	
Oct. 19			42.0	4.4	46.4	56.0	49.0	52.5	6.1		10.5	8.4	10.5	41.9			
Nov. 16			44.0	4.4	48.4	59.0	53.0	56.0	7.6		10.0	7.9	12.0	36.7			
Dec. 14			49.0	4.4	53.4	62.5	57.0	59.8	6.4		9.0	7.4	10.8	40.7			
Jan. 18			60.0	4.4	64.4	76.0	68.0	72.0	7.6		7.3	6.1	12.0	36.7			
Feb. 15			56.0	4.4	60.4	73.5	65.0	69.3	8.9		7.9	6.3	13.3	33.1			
Mar. 20			54.0	4.4	58.4	70.0	62.0	66.0	7.6		8.1	6.7	12.0	36.7			
Apr. 18			53.0	4.4	57.4	72.0	65.0	68.5	11.1		8.3	6.4	15.5	28.4			
May 20			57.0	4.4	61.4	74.5	64.0	69.3	7.9		7.7	6.3	12.3	36.7			

Digitized by Google

TABLE A66—Continued.

BARLEY, NO. 2, FROM GLEN TO MINNEAPOLIS, MINN.—Continued.

Period.	Price per bushel paid producer at country elevator.			Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination per bushel.	Cash price per bushel at destination (market).			Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Mileage, short line.	Average freight rate per hundredweight.	Average rate per ton-mile.
	High.	Low.	Mean.			High.	Low.	Mean.	Over.	Under.	Country elevator.	Destination.					
3	4	5	6	7	8 (6+7)	9	10	11	12(11—8)	13(8—11)	14	15	16(11—6)	17(7+16)	18	19	20
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*			*Cents.*	*Cents.*
June 20	.....	.....	53.0	4.4	57.4	72.0	62.0	67.0	9.6	.....	8.3	6.6	14.0	31.4	.....	.....	.....
July 18	.....	.....	56.0	4.4	60.4	70.5	62.0	66.3	5.9	.....	7.9	6.6	10.3	42.3	.....	.....	.....
Aug. 16	.....	.....	76.0	4.4	80.4	95.0	71.0	83.0	2.6	.....	5.8	5.3	7.0	62.9	.....	.....	.....
Sept. 16	.....	.....	73.0	4.4	77.4	105.0	68.0	84.0	6.6	.....	6.0	5.2	11.0	40.0	.....	.....	.....
Average	76.0	42.0	56.1	4.4	60.5	105.0	49.0	67.8	7.3	.....	7.8	6.5	11.7	37.6	.....	.....	.....
1920–21.																	
Oct. 19	.....	.....	68.0	8.2	76.2	86.0	62.0	74.0	.....	2.2	12.1	11.1	6.0	130.7	.....	.....	.....
Nov. 16	.....	.....	62.0	8.2	70.2	90.0	66.0	78.0	7.8	.....	13.2	10.5	16.0	51.3	.....	.....	.....
Dec. 20	.....	.....	48.0	8.2	56.2	76.0	52.0	64.0	7.8	.....	17.1	12.8	16.0	51.3	.....	.....	.....
Jan. 17	.....	.....	46.0	8.2	54.2	67.0	53.0	60.0	5.8	.....	17.8	13.7	14.0	58.6	.....	.....	.....
Feb. 16	.....	.....	40.0	8.2	48.2	61.0	48.0	54.5	6.3	.....	20.5	15.0	14.5	56.6	.....	.....	.....
Mar. 17	.....	.....	41.0	8.2	49.2	61.0	48.0	54.5	5.3	.....	20.0	15.0	13.5	60.7	.....	.....	.....
Apr. 16	.....	.....	37.0	8.2	45.2	57.0	43.0	50.0	4.8	.....	22.2	16.4	13.0	63.1	.....	.....	.....
May 16	.....	.....	38.0	8.2	46.2	55.0	46.0	50.5	4.3	.....	21.6	16.2	12.5	65.6	.....	.....	.....
June 21	.....	.....	37.0	8.2	45.2	57.0	45.0	51.0	5.8	.....	22.2	16.1	14.0	58.6	.....	.....	.....
July 20	.....	.....	40.0	8.2	48.2	60.0	48.0	54.0	5.8	.....	20.5	15.2	14.0	58.6	.....	.....	.....
Aug. 16	.....	.....	40.0	8.2	48.2	56.0	41.0	48.5	.3	.....	20.5	16.9	8.5	96.5	.....	.....	.....
Sept. 19	.....	.....	38.0	8.2	46.2	54.0	42.0	48.0	1.8	.....	21.6	17.1	10.0	82.0	.....	.....	.....
Average	68.0	37.0	44.6	8.2	52.8	90.0	41.0	57.3	4.5	.....	18.4	14.3	12.7	64.6	.....	.....	.....

Digitized by Google

TABLE A67.

Statement showing the average price paid producer, the average market price, and the average transportation cost, from typical producing points to typical markets.

BARLEY.

Point of destination (market).	Point of origin.	Period.	Mean price per bushel paid producer at country elevator.	Freight rate to destination, per bushel.	Producer's mean price plus freight rate to destination, per bushel.	Mean cash price per bushel at destination (market).	Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Short-line mileage.
							Over.	Under.	Country elevator.	Destination.			
1	2	3		7	8 (6+7)	11	12 (11—8)	13 (8—11)	14	15	16 (11—6)	17 (7÷16)	19
Minneapolis, Minn.:			*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*		
No. 4 barley	28 typical points in Minnesota, North Dakota, and South Dakota.	1912–13	39.7	5.5	45.2	52.4	7.2	.....	13.9	10.5	12.7	43.3	287.0
		1915–16	55.3	5.4	60.7	67.7	7.0	.....	9.8	8.0	12.4	43.5	287.0
		1920–21	40.5	9.4	49.9	58.1	8.2	.....	23.2	16.1	17.6	53.4	287.0
Medium barley	12 typical points in South Dakota.	1912–13	42.9	7.2	50.1	52.5	2.4	.....	16.8	13.7	9.6	75.0	303.2
		1915–16	54.8	7.2	62.0	67.8	5.8	.....	13.1	10.6	13.0	55.4	303.2
		1920–21	41.4	12.3	53.7	59.9	6.2	.....	29.7	20.5	18.5	66.5	303.2
No. 2 barley	4 typical points in Minnesota and North Dakota.	1912–13	39.2	6.5	45.7	53.0	7.3	.....	16.6	12.3	13.8	47.1	338.2
		1915–16	54.7	6.4	61.1	69.0	7.9	.....	11.8	9.3	14.3	44.7	338.2
		1920–21	45.6	9.8	55.4	59.0	3.6	.....	21.5	16.6	13.4	73.1	328.2
No. 3 barley	5 typical points in Minnesota and North Dakota.	1912–13	38.9	6.2	45.1	52.8	7.7	.....	15.9	11.7	13.9	44.6	313.5
		1915–16	59.5	6.3	65.8	68.5	2.7	.....	10.6	9.2	9.0	70.0	313.5
		1920–21	42.9	10.7	53.6	55.3	1.7	.....	24.9	19.3	12.4	86.3	313.5
Milwaukee, Wis.:													
No. 4 barley	9 typical points in Minnesota and South Dakota.	1912–13	44.2	9.1	53.3	59.8	6.5	.....	20.6	15.2	15.6	58.0	514.0
		1915–16	56.8	8.9	65.7	74.3	8.6	.....	15.7	12.0	17.5	51.0	514.0
		1920–21	46.7	16.1	62.8	72.4	9.6	.....	34.5	22.2	25.7	62.7	514.0
Medium barley	12 typical points in South Dakota.	1912–13	42.8	10.3	53.1	61.7	8.6	.....	24.1	16.7	18.9	54.5	597.7
		1915–16	58.8	10.5	69.3	76.9	7.6	.....	17.9	13.7	18.1	58.0	597.7
		1920–21	41.2	18.2	59.4	74.5	15.1	.....	44.2	24.4	33.3	54.7	597.7

Digitized by Google

TABLE A67—Continued.

Statement showing the average price paid producer, the average market price, and the average transportation cost, from typical producing points to typical markets—Continued.

BARLEY—Continued.

Point of destination (market).	Point of origin.	Period.	Mean price per bushel paid producer at country elevator.	Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination, per bushel.	Mean cash price per bushel at destination (market).	Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Short-line mileage.
							Over.	Under.	Country elevator.	Destination.			
1	2	3	6	7	8 (6+7)	11	12 (11—8)	13 (8—11)	14	15	16 (11—6)	17 (7X16)	19
Chicago, Ill.:			*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*		
Medium barley	do	1912–13	42.8	10.5	53.3	59.5	6.2	.....	24.5	17.6	16.7	62.9	658.9
		1915–16	54.7	10.7	65.4	72.1	6.7	.....	19.6	14.8	17.4	61.5	658.9
		1920–21	41.4	18.8	60.2	71.9	11.7	.....	45.4	26.1	30.5	61.6	658.9
No. 4 barley	9 typical points in Minnesota and South Dakota.	1912–13	44.1	9.1	53.2	59.4	6.2	.....	20.6	15.3	15.3	59.0	583.2
		1915–16	56.8	8.9	65.7	71.8	6.1	.....	15.7	12.4	15.0	59.0	583.2
		1920–21	45.7	16.1	61.8	72.0	10.2	.....	35.2	22.4	26.3	61.0	583.2
San Francisco, Calif., brewing and feed barley.	5 typical points in California.	1912–13	56.3	9.8	66.1	66.9	.8	.....	17.4	14.6	10.6	92.0	344.4
		1915–16	55.4	9.9	65.3	66.1	.8	.....	17.9	15.0	10.7	93.0	344.4
		1920–21	59.9	15.1	75.0	75.2	.2	.....	25.2	20.1	15.3	98.0	344.4
CORN.													
Minneapolis, Minn.:													
No. 3 mixed	7 typical points in South Dakota.	1912–13	40.5	9.4	49.9	55.2	5.3	.....	23.0	17.0	14.7	63.0	341.7
		1915–16	42.0	9.4	51.4	76.6	25.2	.....	22.0	12.0	34.6	27.0	344.7
		1920–21	38.9	16.5	53.4	59.3	5.9	.....	44.0	27.0	22.4	74.0	344.7
No. 3 yellow	6 typical points in Illinois and Iowa.	1912–13	43.7	7.0	50.7	55.7	5.0	.....	16.0	12.0	12.0	58.3	256.0
		1915–16	52.7	6.7	59.4	79.1	19.7	.....	13.0	9.0	23.4	29.0	256.0
		1920–21	40.1	11.9	52.0	59.3	7.3	.....	29.0	20.0	19.2	62.0	256.0

Digitized by Google

Chicago, Ill.:													
No. 3 yellow	16 typical points in Iowa, Illinois, and South Dakota.	1912–13	39.6	7.2	46.8	57.6	10.8	.....	18.0	12.5	18.0	40.0	342.8
		1915–16	59.7	7.3	67.0	74.8	7.8	.....	12.0	9.9	15.1	48.0	312.8
		1920–21	48.2	13.4	61.6	65.4	3.8	.....	28.0	20.4	17.2	77.0	342.8
No. 3 mixed	10 typical points in Iowa and South Dakota.	1912–13	42.8	11.7	54.5	57.7	3.2	.....	27.0	20.0	14.9	78.0	585.7
		1915–16	47.6	11.7	59.3	74.1	14.8	.....	24.0	16.0	26.5	44.0	585.7
		1920–21	38.6	21.0	59.6	65.1	5.5	.....	54.0	32.0	26.5	79.2	585.7
St. Louis, Mo.:													
No. 2 yellow	12 typical points in Iowa and Illinois.	1912–13	49.6	6.1	55.7	65.1	9.4	.....	12.0	9.3	15.5	39.0	287.8
		1915–16	64.2	6.2	70.4	77.0	6.6	.....	9.6	8.0	12.8	48.0	287.8
		1920–21	53.3	11.4	64.7	66.4	1.7	.....	21.0	17.0	13.1	87.0	287.8
No. 3 yellow	13 typical points in Illinois and Iowa.	1912–13	52.2	4.7	56.9	57.4	0.5	.....	9.0	8.0	5.2	90.3	232.3
		1915–16	65.5	4.8	70.3	74.8	4.5	.....	7.0	6.0	9.3	52.0	232.3
		1920–21	53.7	9.2	62.9	67.9	5.0	.....	17.0	13.0	14.2	64.0	232.3
Kansas City, Mo.:													
No. 2 mixed	10 typical points in Kansas, Missouri, and Oklahoma.	1912–13	54.1	4.5	58.6	57.5	.....	1.1	8.0	7.0	3.4	132.0	172.7
		1915–16	64.9	4.5	69.4	71.3	1.9	.....	7.0	6.0	6.4	70.0	172.7
		1920–21	49.9	9.2	59.1	50.9	.8	.....	18.0	15.0	10.0	92.0	172.7
Omaha, Nebr.:													
No. 3 yellow	10 typical points in Nebraska and South Dakota.	1912–13	45.4	5.5	50.9	55.2	4.3	.....	12.1	10.0	9.8	58.1	145.6
		1915–16	56.5	5.5	62.0	70.8	8.8	.....	9.7	7.8	14.3	38.5	145.6
		1920–21	39.4	11.3	50.7	56.5	5.8	.....	28.7	20.0	17.1	66.1	145.6
No. 3 mixed	7 typical points in Nebraska and South Dakota.	1912–13	41.1	8.6	49.7	54.6	4.9	.....	20.9	15.8	13.5	63.7	298.5
		1915–16	42.3	8.6	50.9	69.2	18.3	.....	20.3	12.4	26.9	32.0	298.5
		1920–21	36.1	15.1	51.2	54.7	3.5	.....	41.8	27.6	18.6	81.2	298.5
Baltimore:													
No. 2 yellow	6 typical points in Illinois and Iowa.	1912–13	49.4	12.6	62.0	66.1	4.1	.....	25.0	19.1	16.7	75.0	1,012.8
		1915–16	66.6	13.3	79.9	82.5	2.6	.....	19.0	16.0	15.9	83.0	1,012.8
		1920–21	54.8	27.8	82.6	83.6	1.0	.....	51.0	33.0	28.8	96.0	1,012.8

WHEAT.

Minneapolis, Minn.:													
No. 2 hard winter	8 typical points in South Dakota and Montana.	1912–13	69.8	12.6	82.4	97.4	15.0	.....	18.1	12.9	27.6	45.7	478.0
		1915–16	98.1	12.3	110.4	120.4	10.0	.....	12.5	10.2	22.3	55.2	478.0
		1920–21	114.2	19.9	134.1	155.9	21.8	.....	17.4	12.8	41.7	47.7	478.0
No. 2 northern spring	20 typical points in Minnesota, North and South Dakota.	1912–13	74.9	7.4	82.3	85.2	2.9	.....	9.8	8.6	10.3	72.0	264.4
		1915–16	105.7	7.4	113.1	120.5	7.4	.....	7.0	6.1	14.8	50.0	264.4
		1920–21	132.3	12.4	144.7	157.9	13.2	.....	9.4	7.9	25.6	48.4	264.4
Chicago, Ill.:													
No. 2 hard winter	17 typical points in South Dakota and Iowa.	1912–13	75.4	9.9	85.3	90.9	5.6	.....	13.1	10.9	15.5	63.9	432.3
		1915–16	99.6	9.9	109.5	122.0	12.5	.....	9.9	8.1	22.4	44.2	432.3
		1920–21	127.5	16.8	144.3	158.6	14.3	.....	13.2	10.6	31.1	54.0	432.3
No. 3 hard winter	10 typical points in Iowa	1912–13	80.0	8.9	88.9	93.6	4.7	.....	11.1	9.5	13.6	65.4	385.3
		1915–16	106.7	8.9	114.6	114.1	.....	0.5	8.4	7.8	8.4	106.0	385.3
		1920–21	115.4	15.1	130.5	154.3	23.8	.....	13.1	9.8	38.9	38.8	385.3
St. Louis, Mo.:													
No. 2 hard winter	12 typical points in Iowa and Illinois.	1912–13	81.5	6.7	88.2	90.4	2.2	.....	8.2	7.4	8.9	75.2	288.5
		1915–16	101.3	6.9	108.2	123.5	15.3	.....	6.8	5.6	22.2	31.1	288.5
		1920–21	137.6	11.9	149.5	158.3	8.8	.....	8.7	7.5	20.7	57.5	288.5

Digitized by Google

TABLE A67—Continued.

Statement showing the average price paid producer, the average market price, and the average transportation cost, from typical producing points to typical markets—Continued.

WHEAT—Continued.

Point of destination (market).	Point of origin.	Period.	Mean price per bushel paid producer at country elevator	Freight rate to destination per bushel.	Producer's mean price plus freight rate to destination, per bushel.	Mean cash price per bushel at destination (market).	Mean cash price at destination over or under producer's mean price plus freight rate to destination, per bushel.		Per cent freight rate to mean price at—		Spread between producer's mean price and mean cash price at destination.	Per cent freight rate of spread between producer's mean price and mean cash price at destination.	Short-line mileage.
							Over.	Under.	Country elevator.	Destination.			
1	2	3	6	7	8 (6+7)	11	12 (11—8)	13 (8—11)	14	15	16 (11—6)	17 (7X16)	19
			Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*			*Cents.*		
St. Louis, Mo.—Contd.													
No. 3 hard winter..	9 typical points in Iowa.....	1912-13	80.0	10.8	90.8	95.1	4.3	.....	13.5	11.4	15.1	71.5	464.6
		1915-16	105.2	10.9	116.1	120.3	4.2	.....	10.4	9.1	15.1	72.2	464.6
		1920-21	112.1	17.4	129.5	155.8	26.3	.....	15.5	11.2	43.7	39.8	464.6
Baltimore, Md.:													
No. 2 hard winter..	10 typical points in Ohio and Indiana.	1912-13	82.5	9.1	91.6	102.4	10.8	.....	11.0	8.9	19.9	45.7	701.3
		1915-16	112.8	9.7	122.5	126.5	4.0	.....	8.6	7.7	13.7	70.8	704.3
		1920-21	145.9	21.2	167.1	175.0	7.9	.....	14.5	12.1	29.1	72.9	704.3
New York, No. 2 hard winter.	11 typical points in Iowa, Illinois, and Ohio.	1912-13	82.6	14.3	96.9	101.6	4.7	.....	17.3	14.1	19.0	75.3	1,031.9
		1915-16	105.6	14.9	120.5	135.5	15.0	.....	14.1	11.0	29.9	49.8	1,031.9
		1920-21	141.7	28.9	170.6	188.3	12.7	.....	20.4	15.8	41.6	69.5	1,031.9
Omaha, Nebr., No. 2 hard winter.	15 typical points in Colorado, Nebraska, and South Dakota.	1912-13	73.6	8.9	82.5	83.3	.8	.....	12.0	11.1	9.7	92.0	233.4
		1915-16	101.7	8.9	110.6	114.2	3.6	.....	9.0	8.0	12.5	71.0	233.4
		1920-21	121.2	14.4	135.6	150.4	14.8	.....	12.0	9.0	29.2	49.0	233.4
Galveston, Tex.:													
No. 1 hard winter..	6 typical points in Texas....	1912-13	80.1	10.7	90.8	98.9	8.1	.....	13.0	11.0	18.8	56.0	679.4
		1915-16	105.5	11.3	116.8	122.9	6.1	.....	11.0	9.0	17.4	65.0	679.4
		1920-21	145.2	21.3	166.5	176.6	10.1	.....	15.0	12.0	31.4	68.0	679.4
No. 2 hard winter..	9 typical points in Oklahoma and Texas.	1912-13	75.2	13.9	89.1	95.8	6.7	.....	18.0	14.0	20.6	67.0	570.2
		1915-16	101.9	14.3	116.2	118.6	2.4	.....	14.0	12.0	16.7	86.0	570.2
		1920-21	130.0	28.7	158.7	183.3	24.6	.....	22.0	11.6	53.3	54.0	570.2

Digitized by Google

Minneapolis, Minn., No. 3 white.	18 typical points in Minnesota and South Dakota.	1912-13	27.0	4.3	31.3	33.7	2.4	.....	16.0	13.0	6.7	64.0	259.8
		1915-16	33.9	4.1	38.0	41.2	3.2	.....	12.0	9.9	7.3	56.0	259.8
		1920-21	27.2	7.4	34.6	37.5	2.9	.....	27.0	19.7	10.3	71.8	259.8
Chicago, Ill.:													
No. 3 white.....	20 typical points in Illinois, Iowa, and South Dakota.	1912-13	30.3	4.7	35.0	36.3	1.3	.....	15.0	13.0	6.0	78.0	448.6
		1915-16	35.9	4.8	40.7	43.0	2.3	.....	13.3	11.0	7.1	67.0	448.6
		1920-21	31.4	8.7	40.1	41.4	1.3	.....	27.7	21.0	10.0	87.0	448.6
No. 2 white.....	5 typical points in Illinois...	1912-13	32.9	1.9	34.8	35.9	1.1	.....	5.7	5.2	3.0	63.0	145.6
		1915-16	38.4	2.2	40.6	43.6	3.0	.....	5.7	5.0	5.2	42.0	145.6
		1920-21	35.7	4.0	39.7	43.1	3.4	.....	11.2	9.2	7.4	54.0	145.6
New York, No. 3 white.	13 typical points in Iowa, Illinois, and Indiana.	1912-13	31.5	7.3	38.8	38.3	.....	.5	23.0	19.0	6.8	107.0	103.5
		1915-16	36.3	7.6	43.9	48.7	4.8	.....	21.0	15.6	12.4	61.2	103.5
		1920-21	34.4	12.8	47.2	53.5	6.3	.....	37.0	24.0	19.1	67.0	103.5
St. Louis, Mo.:													
No. 3 white.....	20 typical points in Illinois and Iowa.	1912-13	31.9	4.0	35.9	36.8	.9	.....	12.5	10.8	4.9	81.0	335.5
		1915-16	36.6	4.0	40.6	42.9	2.3	.....	10.9	9.3	6.3	63.0	335.5
		1920-21	33.5	7.5	40.0	42.5	2.5	.....	23.0	17.6	10.0	74.8	335.5
No. 2 white.....	12 typical points in Illinois and Iowa.	1912-13	32.5	2.9	35.4	42.3	6.9	.....	8.9	6.9	9.8	29.0	271.7
		1915-16	37.7	3.1	40.8	42.8	2.0	.....	8.2	7.2	5.1	60.8	271.7
		1920-21	35.3	5.5	40.8	43.8	3.0	.....	15.5	12.5	8.5	64.0	271.7
Omaha, Nebr., No. 3 white.	20 typical points in Nebraska and South Dakota.	1912-13	27.2	4.3	31.5	34.8	3.3	.....	16.0	12.0	7.6	56.0	297.9
		1915-16	33.6	4.3	37.9	40.7	2.8	.....	13.0	10.5	7.1	60.5	297.9
		1920-21	27.2	7.8	35.0	39.1	4.1	.....	28.0	19.0	11.9	65.5	297.9
New Orleans, La.....	4 typical points in Illinois...	1912-13	32.9	5.7	38.6	42.1	3.5	.....	17.3	13.5	9.2	62.0	778.5
		1915-16	38.5	6.0	44.5	48.4	3.9	.....	15.6	12.4	9.9	60.6	778.5
		1920-21	36.1	11.5	47.6	55.1	7.5	.....	31.9	20.9	19.0	60.5	778.5

Digitized by Google

TABLE A72.—*Cotton—From various States.*

Point of destination (market).	Point of origin.	Month.	1912–13					
			Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
							Point of origin.	Destination.
1	2	3	4	5	6 (4+5)	7	8 (5÷4)	9 (5÷7)
Augusta, Ga.	Milledgeville, Ga.		$11.94	$0.24	$12.18	$12.28	2.0	1.96
Charleston, S. C.	Chester, S. C.		11.94	.35	12.29	[1] 12.40	2.9	2.8
	Hartsville, S. C.		11.54	.29	11.83	[1] 12.40	2.5	2.3
	Sumter, S. C.		11.84	.26	12.10	[1] 12.40	2.2	2.1
Columbia, S. C.	Chester, S. C.		11.94	.23	12.17	[1] 12.40	1.9	1.9
	Hartsville, S. C.		11.54	.26	11.80	[1] 12.40	2.3	2.1
Galveston, Tex.	Abilene, Tex.		11.60	.51	12.11	12.36	4.4	4.1
	Ardmore, Okla.		11.70	.50	12.20	12.30	4.3	4.1
	Blytheville, Ark.		11.79	.80	12.59	12.42	6.8	6.4
	Oklahoma City, Okla.		11.15	.60	11.75	12.45	5.4	4.8
	San Antonio, Tex.		11.68	.51	12.19	12.36	4.4	4.1
	Waco, Tex.		11.62	.51	12.13	12.36	4.4	4.1
Greenville, S. C.	Milledgeville, Ga.		11.94	.39	12.33	12.24	3.27	3.19
Lowell, Mass.	Abilene, Tex.		11.60	.91	12.51	[1] 12.48	7.8	7.3
	Arlington, Ga.		11.27	.68	11.95	[1] 12.40	6.0	5.5
	Blytheville, Ark.		11.79	.75	12.54	[1] 12.57	6.4	6.0
	Columbia, Miss.		11.71	.966	12.67	[2] 12.33	8.3	7.8
	Hartsville, S. C.		11.54	.65	12.19	[1] 12.40	5.6	5.2
	Helena, Ark.		12.18	.455	12.635	[1] 12.57	3.7	3.6
	Humboldt, Tenn.		11.82	.83	12.65	[3] 12.35	7.0	6.7
	Lumberton, N. C.		11.52	[4] .63	12.15	[1] 12.40	5.5	5.1
	Milledgeville, Ga.		11.94	.665	12.605	[5] 12.39	5.57	5.37
	Oklahoma, Okla.		11.15	.95	12.10	[1] 12.57	8.5	7.6
	Waco, Tex.		11.62	.91	12.53	[1] 12.48	7.8	7.3
New Orleans, La.	Blytheville, Ark.		11.79	.62	12.41	12.34	5.3	5.0
	Booneville, Ark.		12.17	.52	12.69	12.71	4.3	4.1
	Columbia, Miss.		11.71	.30	12.01	12.33	2.6	2.4
	Helena, Ark.		12.18	.23	12.41	12.71	1.9	1.8
	Natchez, Miss.		11.78	.16	11.94	12.33	1.4	1.3
	Oklahoma, Okla.		11.15	.615	11.765	12.71	5.5	4.8
	Prentiss, Miss.		11.58	.45	12.03	12.33	3.9	3.7
	Waco, Tex.		11.62	.63	12.25	12.33	5.4	5.1
San Francisco, Calif.	Abilene, Tex.		11.60	.95	12.55	[6] 11.95	8.19	7.95
Savannah, Ga.	Arlington, Ga.		11.27	.40	11.67	[1] 12.40	3.5	3.2
	Milledgeville, Ga.		11.94	.34	12.28	[1] 12.40	2.85	2.74
Galveston, Tex.	Abilene, Tex.	October	9.80	.51	10.31	10.88	5.2	4.7
		November	10.80	.51	11.31	12.25	4.7	4.5
		December	12.00	.51	12.51	13.00	4.2	3.9
		January	11.30	.51	11.81	12.31	4.5	4.1
		February	11.80	.51	12.11	[1] 12.63	4.4	4.0
		March	11.50	.51	12.01	12.63	4.4	4.0
		April	11.30	.51	11.81	12.56	4.5	4.0
		May	11.10	.51	11.61	12.25	4.6	4.1
		June	10.80	.51	11.31	12.38	4.7	4.1
		July	11.20	.51	11.71	12.31	4.5	4.1
		August	10.90	.51	11.41	11.88	4.7	4.3
		September	12.20	.51	12.71	13.19	4.2	4.0
		Average	11.20	.51	11.71	12.36	4.5	4.3

[1] Price at New York, N. Y.
[2] Price at New Orleans, La.
[3] Price at Memphis, Tenn.
[4] All rail rates.
[5] Price at Boston, Mass.
[6] Price at Oakland, Calif.

Digitized by Google

TABLE A72.—*Cotton—From various States*—Continued.

Point of destination (market).	Point of origin.	Month.	1915-16					
			Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
							Point of origin.	Destination.
1	2	3	10	11	12 (10+11)	13	14 (11÷10)	15 (11÷13)
Augusta, Ga.	Milledgeville, Ga.		$12.26	$0.24	$12.50	$12.49	1.96	1.92
Charleston, S. C.	Chester, S. C.		12.31	.35	12.66	[1] 12.89	2.8	2.7
	Hartsville, S. C.		12.01	.29	12.30	[1] 12.89	2.4	2.2
	Sumter, S. C.		12.01	.26	12.27	[1] 12.89	2.2	2.0
Columbia, S. C.	Chester, S. C.		12.31	.23	12.54	[1] 12.89	1.9	1.8
	Hartsville, S. C.		12.01	.26	12.27	[1] 12.89	2.2	2.0
Galveston, Tex.	Abilene, Tex.		12.43	.51	12.94	12.97	4.1	3.9
	Ardmore, Okla.		11.49	.50	11.99	12.02	4.4	4.2
	Blytheville, Ark.		11.50	.81	12.31	12.71	7.0	6.4
	Oklahoma City, Okla.		11.81	.60	12.41	12.94	5.1	4.6
	San Antonio, Tex.		12.06	.51	12.57	12.97	4.2	3.9
	Waco, Tex.		12.45	.51	12.96	12.97	4.1	3.9
Greenville, S. C.	Milledgeville, Ga.		12.26	.39	12.65	12.62	3.18	3.09
Lowell, Mass.	Abilene, Tex.		12.43	.947	13.377	[1] 12.83	7.6	7.4
	Arlington, Ga.		11.89	.68	12.57	[1] 12.89	5.7	5.3
	Blytheville, Ark.		11.50	.765	12.265	[1] 12.93	6.7	5.9
	Columbia, Miss.		12.20	.966	13.166	[2] 12.50	7.9	7.7
	Hartsville, S. C.		12.01	.68	12.69	[1] 12.89	5.7	5.3
	Helena, Ark.		12.28	.565	12.845	[1] 12.93	4.6	4.4
	Humboldt, Tenn.		12.00	.846	12.846	[3] 12.71	7.1	6.7
	Lumberton, N. C.		12.06	.66	12.72	[1] 12.89	5.5	5.1
	Milledgeville, Ga.		12.26	.665	12.925	[5] 12.81	5.43	5.19
	Oklahoma, Okla.		11.81	.95	12.76	[1] 12.93	8.0	7.4
	Waco, Tex.		12.45	.947	13.397	[1] 12.83	7.6	7.4
New Orleans, La.	Blytheville, Ark.		11.50	.40	11.90	12.67	3.5	3.2
	Booneville, Ark.		12.58	.52	13.10	12.58	4.1	4.1
	Columbia, Miss.		12.20	.40	12.60	12.50	3.3	3.2
	Helena, Ark.		12.28	.23	12.51	12.58	1.9	1.8
	Natchez, Miss.		12.05	.16	12.21	12.55	1.3	1.3
	Oklahoma, Okla.		11.81	.615	12.425	12.58	5.2	4.9
	Prentiss, Miss.		11.98	.45	12.43	12.55	3.8	3.6
	Waco, Tex.		12.45	.61	13.06	12.55	4.9	4.9
San Francisco, Calif.	Abilene, Tex.		12.43	.95	13.38	[6] 12.92	7.64	7.36
Savannah, Ga.	Arlington, Ga.		11.89	.40	12.29	[1] 12.89	3.4	3.1
	Milledgeville, Ga.		12.26	.34	12.60	[1] 12.88	2.78	2.64
Galveston, Tex.	Abilene, Tex.	October	11.50	.51	12.01	12.25	4.4	4.5
		November	10.70	.51	11.21	11.50	4.7	4.4
		December	11.10	.51	11.61	12.10	4.6	4.2
		January	11.60	.51	12.11	12.50	4.4	4.1
		February	11.20	.51	11.71	12.05	4.5	4.2
		March	11.40	.51	11.91	12.35	4.5	4.1
		April	11.40	.51	11.91	12.35	4.5	4.1
		May	11.10	.51	11.61	13.10	4.6	3.9
		June	12.50	.51	13.01	13.40	4.1	3.8
		July	12.70	.51	13.21	13.75	4.0	3.7
		August	13.50	.51	14.01	14.55	3.8	3.5
		September	14.80	.51	15.31	15.75	3.4	3.2
		Average	11.90	.51	12.41	12.97	4.3	3.9

[1] Price at New York, N. Y.
[2] Price at New Orleans, La.
[3] Price at Memphis, Tenn.
[4] All rail rates.
[5] Price at Boston, Mass.
[6] Price at Oakland, Calif.

Digitized by Google

TABLE A72—*Cotton—From various States*—Continued.

Point of destination (market).	Point of origin.	Month.	1920-21					
			Price per hundred weight paid producer point of origin.	Freight rate to destination per hundred weight.	F. o. b. price destination per hundred weight.	Cash price destination per hundred weight.	Per cent freight rate to price at—	
							Point of origin.	Destination.
1	2	3	16	17	18(16+17)	19	20 (17÷16)	21 (17÷19)
Augusta, Ga.	Milledgeville, Ga.		$11.88	$0.44	$12.32	$13.89	3.71	3.17
Charleston, S. C.	Chester, S. C.		14.12	.625	14.745	[1] 15.60	4.4	4.2
	Hartsville, S. C.		12.66	.55	13.21	[1] 15.60	4.3	3.7
	Sumter, S. C.		12.66	.515	13.175	[1] 15.60	4.1	3.4
Columbia, S. C.	Chester, S. C.		14.12	.475	14.595	[1] 15.60	3.4	3.2
	Hartsville, S. C.		12.66	.515	13.175	[1] 15.60	4.1	3.4
Galveston, Tex.	Abilene, Tex.		13.23	.885	14.115	14.61	6.7	6.1
	Ardmore, Okla.		12.72	.825	13.545	14.52	6.5	5.7
	Blytheville, Ark.		11.96	.88	12.84	13.72	7.4	6.4
	Oklahoma City, Okla.		12.61	.95	13.56	14.52	7.5	6.5
	San Antonio, Tex.		12.73	.885	13.615	14.61	7.0	6.1
	Waco, Tex.		12.91	.885	13.795	14.61	6.9	6.1
Greenville, S. C.	Milledgeville, Ga.		11.88	.675	12.555	14.75	5.68	4.58
Lowell, Mass.	Abilene, Tex.		13.23	1.655	13.885	[1] 15.60	12.5	11.0
	Arlington, Ga.		12.35	1.235	13.585	[1] 15.60	10.0	8.2
	Blytheville, Ark.		11.96	1.28	12.24	[1] 14.72	10.7	8.7
	Columbia, Miss.		12.69	1.485	14.175	[2] 12.88	11.7	10.7
	Hartsville, S. C.		12.66	1.345	14.005	[1] 15.60	10.6	9.0
	Helena, Ark.		13.58	1.005	14.585	[1] 14.72	7.4	6.8
	Humboldt, Tenn.		13.06	1.305	14.365	[3] 13.98	10.0	9.3
	Lumberton, N. C.		12.42	[4] 1.28	13.70	[4] 15.00	10.3	8.5
	Milledgeville, Ga.		11.88	1.18	13.06	[5] 15.13	9.93	7.8
	Oklahoma, Okla.		12.61	1.49	14.10	[1] 14.72	11.8	10.1
	Waco, Tex.		12.91	1.655	14.565	[1] 15.60	12.8	11.0
New Orleans, La.	Blytheville, Ark.		11.96	.68	12.64	13.76	5.7	4.9
	Booneville, Ark.		12.67	.84	13.51	13.88	6.6	6.1
	Columbia, Miss.		12.69	.725	13.415	13.88	5.7	5.2
	Helena, Ark.		13.58	.425	14.005	13.88	3.1	3.1
	Natchez, Miss.		13.40	.385	13.785	13.88	2.9	2.8
	Oklahoma, Okla.		12.61	.97	13.58	13.88	7.7	7.0
	Prentiss, Miss.		13.12	.75	13.87	13.88	5.7	5.4
	Waco, Tex.		12.91	1.065	13.975	13.88	8.2	7.7
San Francisco, Calif.	Abilene, Tex.		13.21	1.694	14.904	[6] 13.90	12.82	12.20
Savannah, Ga.	Arlington, Ga.		12.35	.775	13.125	[1] 15.60	6.3	5.21
	Milledgeville, Ga.		11.88	.563	12.443	[1] 15.17	4.74	3.71
Galveston, Tex.	Abilene, Tex.	October	18.10	.98	18.98	22.00	4.8	4.0
		November	16.90	.88	17.78	18.00	3.2	4.9
		December	12.80	.88	13.68	15.25	6.9	5.8
		January	14.10	.88	14.98	15.25	6.2	5.8
		February	12.40	.88	13.28	13.50	7.1	6.5
		March	10.00	.88	10.88	12.00	8.8	7.3
		April	10.00	.89	10.89	11.30	8.9	7.9
		May	10.90	.89	11.79	12.10	8.2	7.3
		June	9.00	.89	9.89	10.40	9.9	8.5
		July	10.40	.89	11.29	12.20	8.5	7.3
		August	11.00	.89	11.89	12.80	8.1	6.9
		September	18.60	.89	19.49	20.50	4.8	4.3
		Average.	12.80	.885	13.685	14.60	6.9	6.1

[1] Price at New York, N. Y.
[2] Price at New Orleans, La.
[3] Price at Memphis, Tenn.
[4] All rail rates.
[5] Price at Boston, Mass.
[6] Price at Oakland, Calif.

Digitized by Google

TABLE A73.—*Cotton from various States.*

Point of destination (market).	Point of origin.	Month.	1912–13					
			Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
							Point of origin.	Destination.
1	2	3	4	5	6 (4+5)	7	8 (5÷4)	9 (5÷7)
Savannah, Ga.....	Milledgeville, Ga..	October.....	$10.19	$0.34	$10.53	$10.75	3.3	3.2
		November..	12.56	.34	12.90	12.40	2.7	2.7
		December...	12.87	.34	13.21	13.10	2.6	2.6
		January.....	12.25	.34	12.59	12.90	2.8	2.6
		February...	11.19	.34	11.53	12.70	3.0	2.7
		March.....	12.25	.34	12.59	12.60	2.8	2.7
		April.....	12.12	.34	12.46	12.40	2.8	2.7
		May.....	11.62	.34	11.96	12.00	2.9	2.8
		June.....	11.50	.34	11.84	12.40	2.9	2.7
		July.....	12.00	.34	12.34	12.35	2.8	2.8
		August.....	12.00	.34	12.34	12.00	2.8	2.8
		September..	12.69	.34	13.03	13.25	2.7	2.6
		Average..	11.94	.34	12.28	12.40	2.8	2.7
New Orleans, La...	Columbia, Miss....	October.....	10.50	.30	10.80	10.75	2.9	2.8
		November..	11.75	.30	12.05	12.19	2.6	2.5
		December...	12.50	.30	12.80	13.00	2.4	2.3
		January.....	11.75	.30	12.05	12.31	2.6	2.4
		February...	12.00	.30	12.30	12.44	2.5	2.4
		March.....	12.00	.30	12.30	12.50	2.5	2.4
		April.....	12.00	.30	12.30	12.50	2.5	2.4
		May.....	11.50	.30	11.80	12.31	2.6	2.4
		June.....	11.50	.30	11.80	12.56	2.6	2.4
		July.....	11.50	.30	11.80	12.44	2.6	2.4
		August.....	11.00	.30	11.30	12.00	2.7	2.5
		September..	12.50	.30	12.80	13.00	2.4	2.3
		Average.	11.71	.30	12.01	12.33	2.6	2.4
Do.....	Blytheville, Ark..	October.....	9.50	.62	10.12	10.75	6.5	5.8
		November..	11.50	.62	12.12	12.25	5.4	5.1
		December...	12.25	.62	12.87	12.28	5.1	5.0
		January.....	12.50	.62	13.12	12.50	5.0	4.7
		February...	12.00	.62	12.62	12.37	5.2	4.9
		March.....	11.50	.62	12.12	12.44	5.4	5.1
		April.....	11.25	.62	11.87	12.25	5.5	5.2
		May.....	12.00	.62	12.62	12.31	5.2	4.9
		June.....	12.00	.62	12.62	12.56	5.2	4.9
		July.....	11.75	.62	12.37	12.44	5.3	5.0
		August.....	11.50	.62	12.12	12.00	5.4	5.1
		September..	13.75	.62	14.37	13.87	4.5	4.3
		Average.	11.79	.62	12.41	12.34	5.3	5.0
Lowell, Mass.....	Hartsville, S. C...	October.....	10.37	.65	11.02	10.75	6.3	6.0
		November..	11.50	.65	12.15	12.40	5.7	5.2
		December...	11.62	.65	12.27	13.10	5.6	5.0
		January.....	10.75	.65	11.40	12.90	6.0	5.0
		February....	11.50	.65	12.15	12.70	5.7	5.1
		March.....	12.00	.65	12.65	12.60	5.4	5.2
		April.....	11.87	.65	12.52	12.40	5.5	5.2
		May.....	11.50	.65	12.15	12.00	5.7	5.4
		June.....	11.00	.65	11.65	12.40	5.9	5.2
		July.....	12.00	.65	12.65	12.35	5.4	5.3
		August.....	11.50	.65	12.15	12.00	5.7	5.4
		September..	12.87	.65	13.52	13.25	5.1	4.9
		Average.	11.54	.65	12.19	12.40	5.6	5.2
Do.....	Blytheville, Ark..	October.....	9.50	.75	10.25	11.00	7.9	6.8
		November..	11.50	.75	12.25	12.55	6.5	6.1
		December...	12.25	.75	13.00	13.10	6.1	5.7
		January.....	12.50	.75	13.25	12.90	6.0	5.8
		February...	12.00	.75	12.75	12.50	6.3	6.0
		March.....	11.50	.75	12.25	12.60	6.5	6.0
		April.....	11.25	.75	12.00	12.00	6.7	6.3
		May.....	12.00	.75	12.75	12.00	6.3	6.3
		June.....	12.00	.75	12.75	12.40	6.3	6.0
		July.....	11.75	.75	12.50	13.00	6.4	5.8
		August.....	11.50	.75	12.25	12.00	6.5	6.3
		September..	13.75	.75	14.50	14.80	5.5	5.1
		Average.	11.79	.75	12.54	12.57	6.4	6.0

Digitized by Google

TABLE A 73—*Cotton—From various States*—Continued.

Point of destination (market).	Point of origin.	Month.	1915-16					
			Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
							Point of origin.	Destination.
1	2	3	10	11	12 (10+11)	13	14 (11÷10)	15 (11÷13)
Savannah, Ga....	Milledgeville, Ga.	October...	$12.37	$0.34	$12.71	$12.65	2.7	2.7
		November	11.37	.34	11.71	11.80	2.9	2.9
		December.	10.75	.34	11.09	12.10	3.2	2.8
		January...	12.00	.34	12.34	12.50	2.8	2.7
		February.	10.75	.34	11.09	11.95	3.2	2.8
		March.....	11.75	.34	12.09	12.00	2.9	2.8
		April.....	11.75	.34	12.09	12.00	2.9	2.8
		May.....	12.75	.34	13.09	13.00	2.7	2.6
		June.....	12.62	.34	12.96	13.05	2.7	2.6
		July.....	12.50	.34	12.84	13.10	2.7	2.6
		August....	13.00	.34	13.34	14.30	2.6	2.4
		September	15.44	.34	15.78	16.15	2.2	2.1
		Average.	12.26	.34	12.60	12.88	2.8	2.6
New Orleans, La.	Columbia, Miss..	October...	11.75	.40	12.15	12.07	3.4	3.3
		November	11.25	.40	11.65	11.38	3.5	3.5
		December.	11.50	.40	11.90	11.69	3.5	3.4
		January...	12.00	.40	12.40	12.13	3.3	3.3
		February.	11.50	.40	11.90	11.56	3.5	3.5
		March.....	11.50	.40	11.90	12.00	3.5	3.3
		April.....	11.62	.40	12.02	11.88	3.4	3.4
		May.....	12.25	.40	12.65	12.75	3.3	3.1
		June.....	12.00	.40	12.40	12.81	3.3	3.1
		July.....	12.50	.40	12.90	13.00	3.2	3.1
		August....	13.50	.40	13.90	14.00	3.0	2.9
		September	15.00	.40	15.40	15.38	2.7	2.6
		Average.	12.20	.40	12.60	12.55	3.3	3.3
Do	Blytheville, Ark.	October...	11.00	.40	11.40	12.00	3.6	3.3
		November	11.50	.40	11.90	11.38	3.5	3.5
		December.	11.50	.40	11.90	11.69	3.5	3.4
		January...	11.50	.40	11.90	12.13	3.5	3.3
		February.	10.00	.40	10.40	11.37	4.0	3.5
		March.....	9.75	.40	10.15	12.00	4.1	3.3
		April.....	11.00	.40	11.40	11.88	3.6	3.4
		May.....	11.25	.40	11.65	12.94	3.6	3.1
		June.....	11.75	.40	12.15	12.88	3.4	3.1
		July.....	12.25	.40	12.65	13.00	3.3	3.1
		August....	11.50	.40	11.90	15.38	3.5	2.6
		September	15.00	.40	15.40	15.38	2.7	2.6
		Average.	11.50	.40	11.90	12.67	3.5	3.2
Lowell, Mass.....	Hartsville, S. C..	October...	$12.00	$0.68	$12.68	$12.65	5.7	5.4
		November	11.00	.68	11.68	11.80	6.2	5.8
		December.	10.75	.68	11.43	12.10	6.3	5.6
		January...	10.75	.68	11.43	12.50	6.3	5.4
		February.	11.00	.68	11.68	11.95	6.2	5.7
		March.....	11.00	.68	11.68	11.95	6.2	5.7
		April.....	11.12	.68	11.80	12.10	6.1	5.6
		May.....	12.50	.68	13.18	13.00	5.4	5.2
		June.....	12.50	.68	13.18	13.05	5.4	5.2
		July.....	12.50	.68	13.18	13.10	5.4	5.2
		August....	13.75	.68	14.43	14.30	4.9	4.8
		September	15.25	.68	15.93	16.15	4.5	4.2
		Average.	12.01	.68	12.69	12.89	5.7	5.3
Do.....	Blytheville, Ark.	October...	11.00	.765	11.765	12.65	7.0	6.0
		November	11.50	.765	12.265	11.75	6.7	6.5
		December.	11.50	.765	12.265	12.10	6.7	6.3
		January...	11.50	.765	12.265	12.40	6.7	6.2
		February.	10.00	.765	10.765	11.45	7.7	6.7
		March.....	9.75	.765	10.515	11.95	7.8	6.4
		April.....	11.00	.765	11.765	12.05	7.0	6.3
		May.....	11.25	.765	12.015	13.00	6.8	5.9
		June.....	11.75	.765	12.515	13.10	6.5	5.8
		July.....	12.25	.765	13.015	12.90	6.2	5.9
		August....	11.50	.765	12.265	15.85	6.7	4.8
		September	15.00	.765	15 765	16.00	5.1	4.8
Average....	.....	.....	11.50	.765	12.265	12.93	6.7	5.9

Digitized by Google

TABLE A73—*Cotton—From various States*—Continued.

COTTON, MIDDLING.

oint of destination (market).	Point of origin.	Month.	1920-21					
			Price per hundredweight paid producer point of origin.	Freight rate to destination per hundredweight.	F. o. b. price destination per hundredweight.	Cash price destination per hundredweight.	Per cent freight rate to price at—	
							Point of origin.	Destination.
1	2	3	16	17	18 (16+17)	19	20 (17÷16)	21 (17÷19)
avannah, Ga....	Milledgeville, Ga.	October...	$15.75	$0.50	$16.25	$20.50	3.2	2.4
		November	14.50	.50	15.00	19.25	3.4	2.6
		December.	12.00	.50	12.50	17.10	4.2	2.9
		January...	12.00	.50	12.50	17.60	4.2	2.8
		February.	12.00	.50	12.50	14.20	4.2	3.5
		March.....	9.00	.50	9.50	11.65	5.6	4.3
		April.....	9.25	.625	9.875	12.15	6.7	5.1
		May.....	10.00	.625	10.625	12.85	6.2	4.9
		June.....	9.00	.625	9.625	11.05	6.9	5.6
		July.....	9.50	.625	10.125	12.85	6.6	4.9
		August....	10.00	.625	10.625	13.00	6.2	4.8
		September	19.50	.625	20.125	19.80	3.2	3.2
		Average.	11.88	56.3	12.443	15.17	4.7	3.7
New Orleans, La.	Columbia, Miss..	October...	18.00	.725	18.725	18.75	4.0	3.9
		November	17.25	.725	17.975	18.00	4.2	4.0
		December.	13.00	.725	13.725	14.00	5.6	5.2
		January...	14.50	.725	15.225	15.25	5.0	4.8
		February.	12.50	.725	13.225	13.25	5.8	5.5
		March.....	9.00	.725	9.725	10.75	8.1	6.7
		April.....	10.00	.725	10.725	11.00	7.3	6.6
		May.....	10.25	.725	10.975	11.88	7.1	6.1
		June.....	8.25	.725	8.975	10.38	8.8	7.0
		July.....	10.00	.725	10.725	11.75	7.3	6.2
		August....	11.00	.725	11.725	12.00	6.6	6.0
		September	18.50	.725	19.225	19.50	3.9	3.7
		Average.	12.69	.725	13.415	13.88	5.7	5.2
Do.....	Blytheville, Ark.	October...	18.00	.68	18.68	19.00	3.8	3.6
		November	15.00	.68	15.68	16.25	4.5	4.2
		December.	8.50	.68	9.18	14.25	8.0	4.8
		January...	11.00	.68	11.68	14.50	6.2	4.7
		February.	11.25	.68	11.93	12.62	6.0	5.4
		March.....	10.00	.68	10.68	11.00	6.8	6.2
		April.....	10.00	.68	10.68	11.00	6.8	6.2
		May.....	9.50	.68	10.18	11.75	7.2	5.8
		June.....	9.00	.68	9.68	10.38	7.6	6.6
		July.....	10.25	.68	10.93	11.75	6.6	5.8
		August....	12.00	.68	12.68	13.13	5.7	5.2
		September	19.00	.68	19.68	19.50	3.6	3.5
		Average.	11.96	.68	12.64	13.76	5.7	5.4
Lowell, Mass.....	Hartsville, S.C..	October...	18.50	1.345	19.845	20.50	7.3	6.6
		November	17.00	1.345	18.345	19.25	7.9	7.0
		December.	9.00	1.345	10.345	15.25	14.9	8.8
		January...	14.00	1.345	15.345	17.60	9.6	7.6
		February.	12.00	1.345	13.345	14.20	11.2	9.5
		March.....	10.50	1.345	11.845	11.65	12.8	11.5
		April.....	10.00	1.345	11.345	11.95	13.5	11.3
		May.....	10.62	1.345	11.965	12.85	12.7	10.5
		June.....	9.50	1.345	10.845	11.05	14.2	12.2
		July.....	10.25	1.345	11.595	12.85	13.1	10.5
		August....	11.00	1.345	12.345	13.00	12.2	10.3
		September	19.50	1.345	20.845	19.80	6.9	6.8
		Average.	12.66	1.345	14.005	15.00	10.6	9.0
Do.....	Blytheville, Ark.	October...	18.00	1.28	19.28	20.50	7.1	6.2
		November	15.00	1.28	16.28	17.25	8.5	7.4
		December.	8.50	1.28	9.78	15.25	15.0	8.4
		January...	11.00	1.28	12.28	16.15	11.6	7.9
		February.	11.25	1.28	12.53	13.20	11.4	9.7
		March.....	10.00	1.28	11.28	11.55	12.8	11.1
		April.....	10.00	1.28	11.28	12.15	12.8	10.5
		May.....	9.50	1.28	10.78	12.60	13.5	10.2
		June.....	9.00	1.28	10.28	11.20	14.2	11.4
		July.....	10.25	1.28	11.53	12.85	12.5	10.0
		August....	12.00	1.28	13.28	14.15	10.7	9.0
		September	19.00	1.28	20.28	19.80	6.7	6.5
		Average.	11.96	1.28	13.24	14.72	10.7	8.7

Digitized by Google

Statement showing the average price paid producer, the average market prices, and the average transportation cost from typical producing points to typical markets.

TABLE A74.

COTTON, MIDDLING GRADE.

Point of destination (market).	Point of origin.	Year.	Price per hundredweight paid producer, point of origin.	Freight rate to destination, per hundredweight.	F. o. b. price, destination, per hundredweight.	Cash price, destination, per hundredweight.	Per cent freight rate to price at—		Short line mileage.
							Point of origin.	Destination.	
1	2	3	4	5	6(4+5)	7	8(5÷4)	9(5÷7)	10
New York, N. Y.	20 typical points in North Carolina, South Carolina, Georgia, Alabama, Tennessee, Arkansas, Mississippi, Oklahoma, and Texas.	1912-13	11.87	.70	12.57	12.47	5.9	5.6	
		1915-16	12.28	.71	12.99	12.89	5.7	5.5	
		1920-21	12.88	1.23	14.11	14.89	9.6	8.3	
Lowell, Mass.	28 typical points in North Carolina, South Carolina, Georgia, Alabama, Tennessee, Arkansas, Mississippi, Oklahoma, and Texas.	1912-13	12.13	.77	12.90	12.44	6.3	6.2	
		1915-16	12.76	.77	13.53	12.82	6.0	6.0	
		1920-21	13.08	1.31	14.39	14.75	10.0	8.9	
Greenville, S. C.	17 typical points in South Carolina, Georgia, Alabama, Mississippi, and Tennessee.	1912-13	11.95	.47	12.42	12.33	3.9	3.8	
		1915-16	12.32	.47	12.79	12.62	3.8	3.7	
		1920-21	13.36	.77	14.13	14.31	5.8	5.4	
La Grange, Ga.	7 typical points in Mississippi and Tennessee.	1912-13	11.82	.74	12.56	12.34	6.3	6.0	
		1915-16	12.21	.74	12.95	12.64	6.1	5.9	
		1920-21	13.18	.87	14.07	14.06	6.7	6.3	
Montgomery, Ala.	6 typical points in Alabama.	1912-13	12.08	.27	12.35	11.89	2.2	2.2	
		1915-16	12.41	.27	12.68	12.31	2.1	2.1	
		1920-21	13.44	.50	13.94	13.62	3.8	3.7	
Memphis, Tenn.	3 typical points in Tennessee.	1912-13	11.91	.34	12.25	12.35	2.8	3.7	
		1915-16	12.26	.34	12.60	12.71	2.8	2.7	
		1920-21	13.50	.60	14.10	13.98	4.4	4.3	
Mobile, Ala.	5 typical points in Alabama.	1912-13	12.32	.42	12.74	12.34	3.4	3.4	
		1915-16	12.55	.42	12.97	12.55	3.4	3.4	
		1920-21	13.81	.73	14.54	13.88	5.3	5.2	
Lanett, Ala.	7 typical points in Alabama.	1912-13	12.05	.41	12.46	11.87	3.4	3.5	
		1915-16	12.38	.36	12.74	12.32	2.9	2.9	
		1920-21	13.49	.62	14.11	13.61	4.6	4.6	
New Orleans, La.	22 typical points in Mississippi, Tennessee, Oklahoma, Arkansas, and Texas.	1912-13	11.80	.54	12.34	12.45	4.6	4.3	
		1915-16	12.25	.53	12.78	12.58	4.4	4.2	
		1920-21	12.95	.89	13.84	13.88	6.9	6.4	
Galveston, Tex.	12 typical points in Arkansas, Oklahoma, and Texas.	1912-13	11.70	.56	12.26	12.41	4.8	4.5	
		1915-16	12.26	.56	12.82	12.87	4.6	4.3	
		1920-21	13.06	.91	13.97	14.05	6.9	6.5	

Digitized by Google

Charleston, S. C.	6 typical points in South Carolina	1912-13	11.90	.31	12.21	12.68	2.5	2.4
		1915-16	12.22	.31	12.53	12.68	2.5	2.4
		1920-21	13.24	.58	13.82	14.55	4.4	4.0
Augusta, Ga.	4 typical points in Georgia	1912-13	11.80	.27	12.07	12.34	2.1	2.2
		1915-16	12.03	.27	12.30	12.69	2.3	2.1
		1920-21	12.62	.50	13.12	14.44	4.0	3.4
Boston, Mass.	6 typical points in Alabama	1912-13	12.09	.66	12.75	12.39	5.6	5.5
		1915-16	12.51	.68	13.19	12.81	5.4	5.3
		1920-21	13.51	1.25	14.76	15.13	9.3	8.3
Macon, Ga.	2 typical points in Georgia	1912-13	12.23	.24	12.47	11.77	1.9	2.0
		1915-16	12.37	.24	12.61	12.29	1.9	1.9
		1920-21	13.04	.44	13.48	14.04	3.4	3.1
Savannah, Ga.	4 typical points in Georgia	1912-13	11.80	.37	12.17	12.40	3.2	3.0
		1915-16	12.01	.38	12.39	12.88	3.1	3.0
		1920-21	12.62	.63	13.25	15.08	5.0	4.2
Avondale, Ala.	6 typical points in Alabama	1912-13	12.08	.34	12.42	11.89	2.8	2.9
		1915-16	12.41	.34	12.75	12.33	2.8	2.8
		1920-21	13.59	.61	14.20	13.62	4.5	4.5
Wilmington, N. C.	2 typical points in North Carolina	1912-13	12.00	.27	12.27	12.40	2.3	2.2
		1915-16	12.43	.27	12.70	12.89	2.2	2.1
		1920-21	13.53	.53	14.06	15.00	3.9	3.5
Greensboro, N. C.	do	1912-13	12.00	.32	12.32	12.40	2.7	2.6
		1915-16	12.43	.32	12.75	12.89	2.6	2.5
		1920-21	13.53	.57	14.10	15.00	4.2	3.8
Charlotte, N. C.	do	1912-13	12.00	.21	12.21	12.40	1.7	1.7
		1915-16	12.43	.21	12.64	12.89	1.7	1.6
		1920-21	13.53	.45	13.98	15.00	3.3	3.0
Columbia, S. C.	7 typical points in South Carolina	1912-13	11.88	.23	12.11	12.27	2.0	2.0
		1915-16	12.17	.23	12.40	12.55	1.9	1.9
		1920-21	13.26	.48	13.74	13.86	3.6	3.5

Digitized by Google

TABLE A77.

HAY.

Point of destination (market) and commodity.	Point of origin.	Year.	Price paid to grower at point of shipment, per ton.			Freight rate to destination, per ton.	Grower's mean price plus freight rate to destination, per ton.	Cash price per ton at destination (market).					
								In car lots.			In less than carload lots.		
			High.	Low.	Mean.			High.	Low.	Mean.	High.	Low.	Mean.
1	2	3	4	5	6	7	8(6+7)	9	10	11	12	13	14
CHICAGO, ILL.													
Alfalfa No. 1	Rapid City, S. Dak	1912–13	$12.00	$12.00	$12.00	$5.80	$17.80	$26.00	$20.50	$22.83	$27.00	$21.50	$23.83
		1915–16	20.00	20.00	20.00	6.20	26.20	28.00	21.50	23.54	29.00	22.50	24.54
		1920–21	24.50	24.50	24.50	10.50	35.00	38.00	27.00	30.67	39.00	28.00	31.67
	Burnett, Wis	1912–13	13.50	12.00	13.00	2.20	15.40	26.00	20.50	22.87	27.00	21.50	23.87
		1915–16	18.50	12.50	14.83	2.20	17.03	28.00	21.50	23.54	29.00	22.50	24.54
		1920–21	26.00	13.50	16.83	3.80	20.63	38.00	27.00	30.67	39.00	28.00	31.67
Clover No. 1	Bonair, Iowa	1912–13	11.00	9.00	9.88	3.00	12.88	19.50	15.00	17.42	20.50	16.00	18.42
		1915–16	11.00	9.00	9.96	3.40	13.36	21.50	15.00	18.13	22.50	16.00	19.13
		1920–21	14.00	8.50	11.17	5.80	16.97	35.00	21.00	25 33	36.00	22.00	26.33
	Burnett, Wis	1912–13	9.50	8.00	8.83	2.20	11.03	19.50	15.00	17.42	20.50	16.00	18.42
		1915–16	14.00	8.00	10.83	2.20	13.03	27.50	15.00	18.17	22.50	16.00	19.17
		1920–21	23.00	8.00	12.08	3.80	15.88	35.00	21.00	25.33	36.00	22.00	26.33
Prairie No. 1	Kearney, Nebr	1912–13	10.00	7.00	8.33	5.00	13.33	20.00	15.50	17.58	21.00	16.00	18.58
		1915–16	8.25	6.00	6.54	5.40	11.94	18.00	15.50	16.75	19.00	17.00	17.75
		1920–21	10.00	7.00	8.08	9.20	17.28	25.00	15.00	18.17	26.00	16.00	19.17
Timothy No. 1	Burnett, Wis	1912–13	12.50	10.00	11.88	2.20	14.08	23.00	17.50	19.79	24.00	18.50	20.79
		1915–16	17.00	10.50	13.13	2.20	15.33	22.00	18.00	20.04	23.00	19.00	21.04
		1920–21	24.00	11.00	14.71	3.80	18.51	37.00	25.00	28.92	38.00	26.00	29.92
	Wausau, Wis	1912–13	11.50	10.00	11.00	3.00	14.00	23.00	17.00	19.58	24.50	18.50	20.96
		1915–16	16.00	9.50	11.33	3.00	14.33	22.00	18.00	19.92	23.00	19.00	21.04
		1920–21	23.00	13.00	16.29	5.10	21.39	37.00	25.00	28.92	38.00	26.00	29.92
Timothy No. 2	Clarksburg, Ill	1912–13	14.00	10.00	11.75	1.88	13.62	18.25	15.25	16.60	20.25	17.25	18.60
		1915–16	10.50	9.00	9.96	1.88	11.84	19.25	15.25	16.63	21.25	17.25	18.63
		1920–21	21.00	11.00	15.08	4.43	19.51	30.50	21.25	24.10	32.50	23.25	26.10
	Burnett, Wis	1912–13	10.50	8.00	9.87	2.20	12.07	18.25	15.25	16.60	19.25	16.25	17.60
		1915–16	16.00	9.00	11.17	2.20	13.37	19.25	15.25	16.62	20.25	16.25	17.62
		1920–21	22.00	8.00	13.33	3.80	17.13	30.50	21.25	24.10	31.50	22.25	26.10

Digitized by Google

Wild No. 1	Newport, Nebr.	1912-13	7.50	6.50	6.90	2.50	11.40	20.00	15.00	17.58	21.00	16.00	18.58
		1915-16	7.00	6.00	6.58	4.90	11.48	18.00	15.50	16.75	19.00	17.00	17.75
		1920-21	11.00	5.00	7.33	8.20	15.53	25.00	15.00	18.17	26.00	16.00	19.17
	Presho, S. Dak.	1912-13	9.00	6.00	7.50	4.70	12.20	20.00	15.00	17.58	21.00	16.00	18.58
		1915-16	12.00	8.00	10.00	5.10	15.10	18.00	15.50	16.75	19.00	16.50	17.75
		1920-21	9.00	6.00	7.65	8.60	16.25	25.00	15.00	18.17	26.00	16.00	19.17
	Burnett, Wis.	1912-13	5.00	4.00	4.54	2.20	6.74	20.00	15.00	17.58	21.00	16.00	18.58
		1915-16	6.00	4.00	4.71	2.20	6.91	18.00	15.50	16.75	19.00	16.60	17.75
		1920-21	6.50	3.50	4.42	3.80	8.22	25.00	15.00	18.17	26.00	16.00	19.17
	Green Bay, Wis.	1912-13	7.00	6.00	6.33	2.50	8.83	20.00	15.00	17.58	21.00	16.00	18.58
		1915-16	8.00	6.00	6.83	2.50	9.33	18.00	15.50	16.75	19.00	16.60	17.75
		1920-21	12.00	7.00	9.12	4.20	13.32	25.00	15.00	18.17	26.00	16.00	19.17
CINCINNATI, OHIO.													
Timothy No. 1	Ottawa, Ohio	1912-13	11.00	6.50	8.52	2.30	10.82	20.00	15.25	17.44	22.00	18.25	20.44
		1915-16	13.75	7.50	10.85	2.42	13.27	23.00	15.25	18.85	26.00	18.25	21.85
		1920-21	22.50	6.50	12.50	5.08	17.58	30.50	19.75	23.88	33.50	22.75	26.88
KANSAS CITY, MO.													
Prairie No. 1	Iola, Kans.	1912-13	13.50	6.80	8.77	1.90	10.67	15.75	9.40	11.07	20.75	14.40	16.08
		1915-16	7.15	5.00	6.07	1.90	7.97	10.00	7.85	8.93	15.00	12.85	13.93
		1920-21	13.20	5.95	9.20	3.20	12.40	17.75	10.50	13.75	22.75	15.50	18.75
	Kearney, Nebr.	1912-13	10.00	7.00	8.33	5.00	13.33	20.00	15.50	17.58	21.00	16.00	18.58
		1915-16	8.25	6.00	6.54	5.40	11.94	18.00	15.50	16.75	19.00	17.00	17.75
		1920-21	10.00	7.00	8.08	9.20	17.28	25.00	15.00	18.17	26.00	16.00	19.17
Wild No. 1	Admire, Kans.	1912-13	11.00	7.00	8.54	2.00	10.54	15.75	9.40	11.08	.....	.....	.....
		1915-16	9.50	8.00	8.88	2.00	10.88	10.00	7.85	8.93	.....	.....	.....
		1920-21	9.50	8.00	8.67	3.40	12.07	17.75	10.50	13.75	20.00	14.35	17.78
MINNEAPOLIS, MINN.													
Timothy No. 1	Wausau, Wis.	1912-13	11.50	10.00	11.00	3.40	14.40	16.50	13.00	14.50	19.25	16.00	17.36
		1915-16	13.50	9.50	10.83	3.40	14.23	18.00	14.00	15.17	21.75	16.50	18.56
		1920-21	33.00	13.00	17.13	5.80	22.93	24.00	18.00	19.96	27.50	21.75	23.90
Wild No. 1	McLeod, N. Dak.	1912-13	6.00	4.00	4.93	2.90	7.82	13.50	8.00	10.79	.....	.....	.....
		1915-16	7.50	6.50	7.17	2.90	10.07	15.50	10.00	12.46	.....	.....	.....
		1920-21	12.00	5.00	7.25	3.60	10.85	20.00	15.00	16.77	.....	.....	.....
	Presho, S. Dak.	1912-13	9.00	6.00	7.50	3.70	11.20	13.50	10.50	12.46	16.75	13.25	15.27
		1915-16	12.00	8.00	10.00	5.10	15.10	16.00	12.00	13.77	19.75	15.25	17.36
		1920-21	9.00	6.00	7.65	6.90	14.55	22.00	14.50	16.38	25.50	18.25	20.19
Wild, mixed No. 1	Blooming Prairie, Minn.	1912-13	7.00	4.00	5.58	2.09	7.67	13.50	9.00	11.29	15.75	12.00	13.75
		1915-16	10.00	5.00	6.83	1.60	8.43	16.50	11.00	13.04	19.75	14.25	16.44
		1920-21	12.00	8.50	10.08	2.70	12.78	18.00	15.00	15.04	21.50	18.50	19.90
NEW YORK, N. Y.													
Timothy No. 1	Batavia-Attica, N. Y.	1912-13	14.00	10.00	12.46	3.00	15.46	22.50	20.50	21.19	26.00	24.00	24.59
		1915-16	18.00	10.00	14.21	3.16	17.37	29.50	22.00	25.83	33.00	25.50	29.33
		1920-21	25.00	12.00	16.55	6.30	22.85	40.00	28.50	32.77	43.50	32.00	36.27
	Cairo, Ohio.	1912-13	12.00	7.00	8.90	4.80	13.70	23.00	20.50	21.50	28.00	25.00	26.08
		1915-16	16.50	8.50	12.10	5.04	17.40	30.00	20.00	26.00	35.00	24.00	30.88
		1920-21	18.00	8.00	12.40	10.10	22.50	42.00	29.00	33.33	45.00	31.00	36.75

Digitized by Google

TABLE A77—Continued.

HAY—Continued.

Point of destination (market) and commodity.	Point of origin.	Year.	Price paid to grower at point of shipment, per ton.			Freight rate to destination, per ton.	Grower's mean price plus freight rate to destination, per ton.	Cash price per ton at destination (market).					
								In car lots.			In less than carload lots.		
			High.	Low.	Mean.			High.	Low.	Mean.	High.	Low.	Mean.
1	2	3	4	5	6	7	8(6+7)	9	10	11	12	13	14
NEW YORK, N. Y.—continued.													
Timothy No. 2	Clayton, N. Y	1912–13	$14.00	$10.00	$12.50	$3.60	$16.10	$20.50	$16.75	$18.83	$24.00	$20.25	$22.33
		1915–16	17.50	12.00	15.50	3.78	19.28	27.00	20.00	23.50	30.50	23.50	27.00
		1920–21	25.00	12.00	18.33	7.60	25.93	38.50	24.00	29.88	42.00	27.50	33.13
	Chambersburg, Pa	1912–13	15.00	11.00	12.71	3.00	15.71	23.00	20.50	21.50	28.00	25.00	26.08
		[1] 1915–16	21.50	17.50	18.60	3.16	27.76	28.00	26.00	26.30	33.00	30.00	31.20
		[2] 1920–21	34.00	14.00	18.00	6.30	24.30	36.00	32.00	32.33	43.00	31.00	36.38
	Columbia Crossroads, Pa	1912–13	15.00	12.35	13.57	3.00	16.57	23.00	20.50	21.50	28.00	26.00	26.08
		1915–16	15.50	12.00	14.22	3.16	17.38	30.00	20.00	26.00	35.00	24.00	30.87
		1920–21	20.00	10.00	17.21	6.30	23.51	42.00	28.00	32.50	45.00	31.00	36.75
ST. LOUIS, MO.													
Timothy No. 2	Limes Springs, Iowa	1912–13	10.00	8.00	9.17	3.50	12.77	18.00	12.00	14.79	.....	.....	.....
		1915–16	10.75	9.00	9.31	3.60	13.41	17.50	13.00	15.00	.....	.....	.....
		1920–21	16.00	7.50	11.48	6.10	17.58	33.00	19.00	23.50	.....	.....	.....
ST. PAUL, MINN.													
Wild No. 1	McLeod, N. Dak	1912–13	6.00	4.00	4.92	2.90	7.82	14.75	9.50	11.95	.....	.....	.....
		1915–16	7.50	6.50	7.17	2.90	10.07	16.75	10.50	13.03	.....	.....	.....
		1920–21	12.00	5.00	7.25	3.60	10.85	20.00	15.00	16.50	.....	.....	.....

[1] Five months.

[2] Three months.

Digitized by Google

Point of destination (market) and commodity.	Point of origin.	Year.	Mean cash price at destination over or under grower's mean price plus freight rate to destination, per ton.				Per cent freight rate to mean price.			Spread between grower's mean price and mean cash price at destination.		Per cent freight rate is of spread between grower's mean price and mean cash price at destination.	
			In car lots.		In less than carload lots.		At point of shipment.	At destination.					
			Over.	Under.	Over.	Under.	Car lots.	Car lots.	Less than carload.	Car lots.	Less than carload.	Car lots.	Less than carload.
1	2	3	15 (11−8)	16 (8−11)	17 (14−8)	18 (8−14)	19(7+6)	21	22	23(11−6 or 6−11)[1]	24(14−6 or 6−14)	25 (7+23)	26 (7+24)
CHICAGO, ILL.													
Alfalfa No. 1	Rapid City, S. Dak	1912-13	$5.03	.....	$6.03	.....	48.3	25.4	24.3	$10.83	$11.83	53.6	49.0
		1915-16	.....	$2.66	.....	$1.66	31.0	26.3	25.3	3.54	4.54	.....	.....
		1920-21	.....	4.33	.....	3.33	42.9	34.2	33.2	6.17	7.17	.....	.....
	Burnett, Wis	1912-13	7.67	.....	8.67	.....	16.9	9.6	9.2	9.87	10.87	22.3	20.2
		1915-16	6.51	.....	7.51	.....	14.8	9.4	9.0	8.71	9.71	25.3	22.7
		1920-21	10.04	.....	11.04	.....	22.6	12.4	12.0	13.84	14.84	27.5	25.6
Clover No. 1	Bonair, Iowa	1912-13	4.54	.....	5.54	.....	30.4	17.2	16.3	7.54	8.54	39.8	35.1
		1915-16	4.77	.....	5.77	.....	34.1	18.8	17.8	8.17	9.17	41.6	37.1
		1920-21	8.36	.....	9.36	.....	51.9	22.9	22.0	14.16	15.16	41.0	38.3
	Burnett, Wis	1912-13	6.39	.....	7.39	.....	24.9	12.6	71.9	8.59	9.59	25.6	22.9
		1915-16	5.14	.....	6.14	.....	20.3	12.1	11.5	7.34	8.34	20.0	26.4
		1920-21	9.45	.....	10.45	.....	31.5	15.0	14.4	13.25	14.25	28.7	26.7
Prairie No. 1	Kearney, Nebr	1912-13	4.25	.....	5.25	.....	60.0	28.5	26.9	9.25	10.25	54.1	48.8
		1915-16	4.81	.....	5.81	.....	82.6	32.2	30.4	10.21	11.21	52.9	48.2
		1920-21	.89	.....	1.89	.....	113.9	50.6	48.0	10.09	11.09	91.2	83.0
Timothy No. 1	Burnett, Wis	1912-13	5.71	.....	6.71	.....	18.5	11.1	10.6	7.91	8.91	27.8	24.7
		1915-16	4.71	.....	5.71	.....	16.8	11.0	10.5	6.91	7.91	31.8	27.8
		1920-21	10.41	.....	11.41	.....	25.8	13.1	12.7	14.21	15.21	26.7	25.0
	Wausau, Wis	1912-13	5.58	.....	6.96	.....	27.3	15.3	14.3	8.58	9.96	35.0	30.1
		1915-16	5.59	.....	6.71	.....	26.5	15.1	14.3	8.59	9.71	34.9	30.9
		1920-21	7.53	.....	8.53	.....	31.3	17.6	17.0	12.63	13.63	40.4	37.4
Timothy No. 2	Clarksburg, Ill	1912-13	2.98	.....	4.98	.....	16.0	11.3	10.1	4.85	6.85	38.8	27.4
		1915-16	4.79	.....	6.79	.....	18.9	11.3	10.1	6.67	8.67	28.2	21.7
		1920-21	4.59	.....	6.59	.....	29.4	18.4	17.0	9.02	11.02	49.1	40.2

Digitized by Google

TABLE A77—Continued.

HAY—Continued.

Point of destination (market) and commodity.	Point of origin.	Year.	Mean cash price at destination over or under grower's mean price plus freight rate to destination, per ton.				Per cent freight rate to mean price.			Spread between grower's mean price and mean cash price at destination.		Per cent freight rate is of spread between grower's mean price and mean cash price at destination.	
			In car lots.		In less than carload lots.		At point of shipment.	At destination.					
			Over.	Under.	Over.	Under.	Car lots.	Car lots.	Less than carload.	Car lots.	Less than carload.	Car lots.	Less than carload.
1	2	3	15 (11—8)	16 (8—11)	17 (14—8)	18 (8—14)	19(7+6)	21	22	23(11—6 or 6—11)[1]	24(14—6 or 6—14)	25 (7+23)	26 (7+24)
CHICAGO, ILL.—continued.													
Timothy No. 2	Burnett, Wis	1912–13	$4.53	.....	$5.53	.....	32.3	13.3	12.5	$6.73	$7.73	32.7	28.5
		1915–16	3.25	.....	4.25	.....	19.7	13.2	12.5	5.45	6.45	40.4	34.1
		1920–21	6.97	.....	7.97	.....	28.5	15.8	15.1	10.77	11.77	35.3	32.3
Wild No. 1	Newport, Nebr	1912–13	6.12	.....	7.12	.....	64.7	25.6	24.2	10.62	11.62	42.4	38.7
		1915–16	5.27	.....	6.27	.....	74.5	29.3	27.6	10.17	11.17	48.2	43.9
		1920–21	2.64	.....	3.64	.....	111.9	45.1	42.8	10.84	11.84	75.6	69.3
	Presho, S. Dak	1912–13	5.38	.....	6.38	.....	62.7	26.7	25.3	10.08	11.08	46.6	42.4
		1915–16	1.65	.....	2.65	.....	51.0	30.4	28.7	6.75	7.75	75.6	65.8
		1920–21	1.92	.....	2.92	.....	112.4	47.3	44.9	10.52	11.52	81.7	74.7
	Burnett, Wis	1912–13	10.84	.....	11.84	.....	48.5	12.5	11.8	13.04	14.05	16.9	15.7
		1915–16	9.84	.....	10.84	.....	46.7	13.1	12.4	12.04	13.04	18.3	16.9
		1920–21	9.95	.....	10.95	.....	86.0	20.9	19.8	13.75	14.75	27.6	25.8
	Green Bay, Wis	1912–13	8.75	.....	9.75	.....	39.5	14.2	13.5	11.25	12.25	22.2	20.4
		1915–16	7.42	.....	8.42	.....	36.6	14.9	14.1	9.92	10.92	25.2	22.9
		1920–21	4.85	.....	5.85	.....	46.1	23.1	21.9	9.05	10.05	46.4	41.8
CINCINNATI, OHIO.													
Timothy No. 1	Ottawa, Ohio	1912–13	6.62	.....	9.62	.....	27.0	.....	.....	.....	.....	.....	.....
		1915–16	5.58	.....	8.58	.....	22.3	.....	.....	.....	.....	.....	.....
		1920–21	6.30	.....	9.30	.....	40.6	.....	.....	.....	.....	.....	.....

Digitized by Google

KANSAS CITY, MO.													
Prairie No. 1	Iola, Kans	1912-13	.40		5.41		21.7	17.2	11.8	2.30	7.31	82.61	25.99
		1915-16	.96		5.96		31.3	21.3	13.6	2.86	7.86	56.43	24.17
		1920-21	1.35		6.35		34.8	23.3	17.1	4.55	9.55	70.33	33.51
	Kearney, Nebr	1912-13	4.25		5.25		60.0	28.5	26.9	9.25	10.25	54.1	48.8
		1915-16	4.81		5.81		82.6	32.2	30.4	10.21	11.21	52.9	48.2
		1920-21	.89		1.89			50.6	48.0	10.09	11.09	91.2	83.0
Wild No. 1	Admire, Kans	1912-13	.54				23.4	18.1		2.54		78.74	
		1915-16		$1.95			22.5	22.4		.05		4000.00	
		1920-21	5.08		5.71		39.2	24.7	19.1	5.08	9.11	66.93	37.32
MINNEAPOLIS, MINN.													
Timothy No. 1	Wausau, Wis	1912-13	.10		2.96		30.9	23.4	19.6	3.50	6.36	97.1	53.5
		1915-16	.94		4.33		31.4	22.4	18.3	4.34	7.73	78.3	44.0
		1920-21		2.97	.97		33.9	29.1	24.3	2.83	6.77		85.7
Wild No. 1	McLeod, N. Dak	1912-13	2.97				58.9	26.9		5.87		49.4	
		1915-16	2.39				40.4	23.3		5.29		54.8	
		1920-21	5.92				49.7	21.5		9.52		37.8	
	Presho, S. Dak	1912-13	1.26		4.07		49.3	29.7	24.2	4.96	7.77	74.6	47.6
		1915-16		1.33	2.26		51.0	37.0	29.4	3.77	7.36		69.3
		1920-21	1.83		5.64		90.2	42.1	34.2	8.73	12.54	79.0	55.0
Wild, mixed No. 1	Blooming Prairie, Minn	1912-13	3.62		6.08		37.5	18.5	15.2	5.71	8.17	36.6	25.6
		1915-16	4.61		8.01		23.4	12.3	9.7	6.21	9.61	25.8	16.6
		1920-21	3.26		7.12		26.8	16.8	13.6	5.96	9.82	45.3	27.5
NEW YORK, N. Y.													
Timothy No. 1	Batavia-Attica, N. Y	1912-13	5.73		9.23		24.1	14.2	12.2	8.73	12.23	34.4	24.5
		1915-16	8.46		11.96		22.2	12.2	10.8	11.62	15.12	27.2	20.9
		1920-21	9.92		13.42		38.1	19.2	17.4	16.22	19.72	38.8	31.9
	Cairo, Ohio	1912-13	7.80				53.9						
		1915-16	8.86				41.7						
		1920-21	10.83				81.5						
Timothy No. 2	Clayton, N. Y	1912-13	2.73		6.23		28.8	19.1	16.1	6.33	9.83	56.9	36.6
		1915-16	4.22		7.72		24.4	15.1	14.0	8.00	11.50	47.2	32.9
		1920-21	3.95		7.20		41.5	25.4	22.9	11.55	14.80	65.8	51.4
	Chambersburg, Pa	1912-13	5.79		10.37		23.6	14.0	11.5	8.79	13.37	34.1	22.4
		[1]1915-16	4.54		9.44		17.0	12.0	10.1	7.70	12.60	41.6	25.1
		[2]1920-21	8.03		12.03		35.0	19.5	17.4	14.33	18.33	44.0	34.4
	Columbia Crossroads, Pa	1912-13	4.93		9.51		22.1	14.0	11.5	7.93	12.51	37.8	23.9
		1915-16	8.62		13.49		22.2	12.2	12.2	11.78	16.65	26.8	19.0
		1920-21	8.99		13.24		36.6	19.4	17.1	15.29	19.54	41.2	32.2
ST. LOUIS, MO.													
Timothy No. 2	Limes Springs, Iowa	1912-13	2.02				39.3	24.3		5.52		64.1	
		1915-16	1.59				36.7	24.0		5.19		69.4	
		1920-21	5.92				53.1	26.0		12.02		50.7	
ST. PAUL, MINN.													
Wild No. 1	McLeod, N. Dak	1912-13	4.13				58.9	24.3		7.03		41.3	
		1915-16	2.96				40.4	22.3		5.86		49.5	
		1920-21	5.65				49.7	21.8		9.25		38.9	

Digitized by Google

TABLE A78.

HAY, NO. 1 WILD, FROM GREEN BAY, WIS., TO CHICAGO, ILL.

Period.	Price paid to grower at point of shipment, per ton.			Freight rate to destination, per ton.	Grower's mean price plus freight rate to destination, per ton.	Cash price per ton at destination (market).						Mean cash price at destination over or under grower's mean price plus freight rate to destination, per ton.	
						In car lots.			In less than carload lots.			In car lots (over).	In less than carload lots (over).
	High.	Low.	Mean.			High.	Low.	Mean.	High.	Low.	Mean.		
3	4	5	6	7	8 (6+7)	9	10	11	12	13	14	15 (11−8)	17 (14−8)
1912–13.													
Oct. 15			$6.00	$2.50	$8.50			$18.50			$19.50	$10.00	$11.00
Nov. 19			6.00	2.50	8.50			18.50			19.50	10.00	11.00
Dec. 17			7.00	2.50	9.50			17.50			18.50	8.00	9.00
Jan. 21			6.50	2.50	9.00			17.50	$18.50	$8.50	18.50	8.50	9.50
Feb. 18			6.50	2.50	9.00			16.50			17.50	7.50	8.50
Mar. 18			7.00	2.50	9.50			16.50			17.50	7.00	8.00
Apr. 15			6.50	2.50	9.00			15.50			16.50	6.50	7.50
May 20			6.00	2.50	8.50			17.50			18.50	9.00	10.00
June 17			6.00	2.50	8.50			15.00			16.00	6.50	7.50
July 15			6.00	2.50	8.50			18.50			19.50	10.00	11.00
Aug. 19			6.00	2.50	8.50			19.50			20.50	11.00	12.00
Sept. 16			6.50	2.50	9.00			20.00			21.00	11.00	12.00
Average	$7.00	$6.00	6.33	2.50	8.83	$20.00	$15.00	17.58	21.00	16.00	18.58	8.75	9.75
1915–16.													
Oct. 19			8.00	2.50	10.50			17.00			18.00	6.50	7.50
Nov. 16			8.00	2.50	10.50			17.00			18.00	6.50	7.50
Dec. 21			7.50	2.50	10.00			16.00			17.00	6.00	7.00
Jan. 18			7.00	2.50	9.50			16.50			17.50	7.00	8.00
Feb. 15			6.50	2.50	9.00			16.50			17.50	7.50	8.50
Mar. 21			7.00	2.50	9.50			15.50			16.50	6.00	7.00
Apr. 18			6.50	2.50	9.00			17.00			18.00	8.00	9.00
May 16			6.00	2.50	8.50			17.00			18.00	8.50	9.50
June 20			6.00	2.50	8.50			17.00			18.00	8.50	9.50

Digitized by Google

Aug. 15			6.50	2.50	9.00			17.00			18.00	8.00	9.00
Sept. 19			6.50	2.50	9.00			18.00			19.00	9.00	10.00
Average	8.00	6.00	6.83	2.50	9.33	18.00	15.50	16.75	19.00	16.50	17.75	7.42	8.42
1920-21.													
Oct. 19			11.00	4.20	15.20			23.00			24.00	7.80	8.80
Nov. 16			12.00	4.20	16.20			25.00			26.00	8.80	9.80
Dec. 21			12.00	4.20	16.20			20.00			21.00	3.80	4.80
Jan. 18			10.50	4.20	14.70			15.00			16.00	.30	1.30
Feb. 15			10.50	4.20	14.70			17.00			18.00	2.30	3.30
Mar. 15			8.00	4.20	12.20			17.00			18.00	4.80	5.80
Apr. 19			7.50	4.20	11.70			17.00			18.00	5.30	6.30
May 17			7.00	4.20	11.20			15.00			16.00	3.80	4.80
June 21			7.00	4.20	11.20			17.00			18.00	5.80	6.80
July 19			8.00	4.20	12.20			18.00			19.00	5.80	6.80
Aug. 16			8.00	4.20	12.20			17.00			18.00	4.80	5.80
Sept. 20			8.00	4.20	12.20			17.00			18.00	4.80	5.80
Average	12.00	7.00	9.12	4.20	13.32	25.00	15.00	18.17	26.00	16.00	19.17	4.85	5.85

Digitized by Google

TABLE A78—Continued.

HAY, NO. 1 WILD, FROM GREEN BAY, WIS., TO CHICAGO, ILL.—Continued.

Period.	Per cent freight rate to mean price.			Spread between grower's mean price and mean cash price at destination.		Per cent freight rate is of spread between grower's mean price and mean cash price at destination.		Mileage (short line).	Average freight rate per hundredweight.	Average rate per ton-mile.
	At point of shipment (car lots).	At destination.								
		Car lots.	Less than carloads.	Car lots.	Less than carloads.	Car lots.	Less than carloads.			
3	19	21	22	23 (11—6 or 6—11)	24 (14—6 or 6—14)	25 (7÷23)	26 (7÷24)	27	28	29
1912–13.									*Cents.*	*Cents.*
Oct. 15	41.7	13.5	12.8	$12.50	$13.50	20.0	18.5			
Nov. 19	41.7	13.5	12.8	12.50	13.50	20.0	18.5			
Dec. 17	35.7	14.3	13.5	10.50	11.50	23.8	21.7			
Jan. 21	38.5	14.3	13.5	11.00	12.00	22.7	20.8			
Feb. 18	38.5	15.2	14.3	10.00	11.00	25.0	22.7			
Mar. 18	35.7	15.2	14.3	9.50	10.50	26.3	23.8			
Apr. 15	38.5	16.1	15.2	9.00	10.00	27.7	25.0			
May 20	41.7	14.3	13.5	11.50	12.50	21.7	20.0			
June 17	41.7	16.7	15.6	9.00	10.00	27.7	25.0			
July 15	41.7	13.5	12.8	12.50	13.50	20.0	18.5			
Aug. 19	41.7	12.8	12.2	13.50	14.50	18.5	17.3			
Sept. 16	38.5	12.5	11.9	13.50	14.50	18.5	17.3			
Average	39.5	14.2	13.5	11.25	12.25	22.2	20.4	197.5	12.5	1.266
1915–16.										
Oct. 19	31.3	14.7	13.9	9.00	10.00	27.8	25.0			
Nov. 16	31.3	14.7	13.9	9.00	10.00	27.8	25.0			
Dec. 21	33.3	15.6	14.7	8.50	9.50	29.4	26.3			
Jan. 18	35.7	15.2	14.3	9.50	10.50	26.3	23.8			
Feb. 15	38.5	15.2	14.3	10.00	11.00	25.0	22.7			
Mar. 21	35.7	16.1	15.2	8.50	9.50	29.4	26.3			
Apr. 18	38.5	14.7	13.9	10.50	11.50	23.8	21.7			
May 16	41.7	14.7	13.9	11.00	12.00	22.7	20.8			
June 20	41.7	14.7	13.9	11.00	12.00	22.7	20.8			

Digitized by Google

Aug. 16	38.5	14.7	13.9	10.50	11.50	23.8	21.7			
Sept. 19	38.5	13.9	13.2	11.50	12.50	21.7	20.0			
Average	36.6	14.9	14.1	9.92	10.92	25.2	22.9	197.5	12.5	1.266
1920–21										
Oct. 19	38.2	18.3	17.5	12.00	13.00	35.0	32.3			
Nov. 16	35.0	16.8	16.2	13.00	14.00	32.3	30.0			
Dec. 21	35.0	21.0	20.0	8.00	9.00	52.5	46.7			
Jan. 18	40.0	28.0	26.3	4.50	5.50	93.3	76.4			
Feb. 15	40.0	24.7	23.3	6.50	7.50	64.6	56.0			
Mar. 15	52.5	24.7	23.3	9.00	10.00	46.7	42.0			
Apr. 19	56.0	24.7	23.3	9.50	10.50	44.2	40.0			
May 17	60.0	28.0	26.3	8.00	9.00	52.5	46.7			
June 21	60.0	24.7	23.3	10.00	11.00	42.0	38.2			
July 19	52.5	23.3	22.1	10.00	11.00	42.0	38.2			
Aug. 16	52.5	24.7	23.3	9.00	10.00	46.7	42.0			
Sept. 20	52.5	24.7	23.3	9.00	10.00	46.7	42.0			
Average	46.1	23.1	21.9	9.05	10.05	46.4	41.8	197.5	21.0	2.127

Digitized by Google

TABLE A79.

HAY, NO. 1 WILD, FROM NEWPORT, NEBR., TO CHICAGO, ILL.

Period.	Price paid to grower at point of shipment, per ton.			Freight rate to destination, per ton.	Grower's mean price plus freight rate to destination, per ton.	Cash price per ton at destination (market).						Mean cash price at destination over or under grower's mean price plus freight rate to destination, per ton.			
						In car lots.			In less than carload lots.			In car lots.		In less than carload lots.	
	High.	Low.	Mean.			High.	Low.	Mean.	High.	Low.	Mean.	Over.	Under.	Over.	Under.
3	4	5	6	7	8 (6+7).	9	10	11	12	13	14	15 (11—8).	16 (8—11).	17 (14—8).	18 (8—14).
1912-13.															
Oct. 7			$7.00	$4.50	$11.50			$18.50			$19.50	$7.00		$8.00	
Nov. 11			7.00	4.50	11.50			18.50			19.50	7.00		8.00	
Dec. 9			7.00	4.50	11.50			17.50			18.50	6.00		7.00	
Jan. 13			6.50	4.50	11.00			17.50			18.50	6.50		7.50	
Feb. 10			6.50	4.50	11.00			16.50			17.50	5.50		6.50	
Mar. 10			6.50	4.50	11.00			16.50			17.50	5.50		6.50	
Apr. 7			6.50	4.50	11.00			15.50			16.50	4.50		5.50	
May 12			7.00	4.50	11.50			17.50			18.50	6.00		7.00	
June 9			7.00	4.50	11.50			15.00			16.00	3.50		4.50	
July 7			7.50	4.50	12.00			18.50			19.50	6.50		7.50	
Aug. 11			7.50	4.50	12.00			19.50			20.50	7.50		8.50	
Sept. 8			7.50	4.50	12.00			20.00			21.00	8.00		9.00	
Average	$7.50	$6.50	6.96	4.50	11.46	$20.00	$15.00	17.58	$21.00	$16.00	18.58	6.12		7.12	
1915-16.															
Oct. 11			6.50	4.90	11.40			17.00			18.00	5.60		6.60	
Nov. 8			6.50	4.90	11.40			17.00			18.00	5.60		6.60	
Dec. 13			7.00	4.90	11.90			16.00			17.00	4.10		5.10	
Jan. 10			6.50	4.90	11.40			16.50			17.50	5.10		6.10	
Feb. 7			6.50	4.90	11.40			16.50			17.50	5.10		6.10	
Mar. 13			7.00	4.90	11.90			15.50			16.50	3.60		4.60	
Apr. 10			7.00	4.90	11.90			17.00			18.00	5.10		6.10	
May 8			7.00	4.90	11.90			17.00			18.00	5.10		6.10	
June 12			6.50	4.90	11.40			17.00			18.00	5.60		6.60	
July 10			6.50	4.90	11.40			16.00			17.50	4.00		6.10	

Digitized by Google

Aug. 7			6.00	2.90	10.90			18.00			19.00	7.10		8.10	
Sept. 11			6.00	4.90	10.90			18.00			19.00	7.10		8.10	
Average	$7.00	$6.00	6.58	4.90	11.48	18.00	15.50	16.71	19.00	16.50	17.75	5.23		6.27	
1920-21.															
Oct. 11			11.00	8.20	19.20			23.00			24.00	3.80		4.80	
Nov. 8			11.00	8.20	19.20			25.00			26.00	5.80		6.80	
Dec. 13			10.00	8.20	18.20			20.00			21.00	1.80		2.80	
Jan. 10			8.00	8.20	16.20			15.00			16.00		$1.20		$0.20
Feb. 7			6.50	8.20	14.70			17.00			18.00	2.30		3.30	
Mar. 7			6.00	8.20	14.20			17.00			18.00	2.80		3.80	
Apr. 11			6.00	8.20	14.20			17.00			18.00	2.80		3.80	
May 9			6.00	8.20	14.20			15.00			16.00	.80		1.80	
June 13			6.00	8.20	14.20			17.00			18.00	2.80		3.80	
July 11			6.50	8.20	14.70			18.00			19.00	3.30		4.30	
Aug. 8			6.00	8.20	14.20			17.00			18.00	2.80		3.80	
Sept. 12			5.00	8.20	13.20			17.00			18.00	3.80		4.80	
Average	11.00	5.00	7.33	8.20	15.53	25.00	15.00	18.17	26.00	16.00	19.17	2.64		3.64	

Digitized by Google

TABLE A79—Continued.

HAY, NO. 1 WILD, FROM NEWPORT, NEBR., TO CHICAGO, ILL.—Continued.

Period.	Per cent freight rate to mean price.			Spread between grower's mean price and mean cash price at destination.		Per cent freight rate is of spread between grower's mean price and mean cash price at destination.		Miles (short line).	Average freight rate per hundredweight.	Average rate per ton-mile.
	At point of shipment (car lots).	At destination.								
		Car lots.	Less than carloads.	Car lots.	Less than carloads.	Car lots.	Less than carloads.			
3	19	21	22	23 (11—6 or 6—11)	24 (14—6 or 6—14)	25 (7÷23)	26 (7÷24)	27	28	29
1912–13.									*Cents.*	*Cents.*
Oct. 7	$64.29	$24.33	$23.08	$11.50	$12.50	$39.13	$36.00			
Nov. 11	64.29	24.33	23.08	11.50	12.50	39.13	36.00			
Dec. 9	64.29	25.72	24.33	10.50	11.50	42.86	39.13			
Jan. 13	69.23	25.72	24.33	11.00	12.00	40.91	37.50			
Feb. 10	69.23	27.27	25.72	10.00	11.00	45.00	40.91			
Mar. 10	69.23	27.27	25.72	10.00	11.00	45.00	40.91			
Apr. 7	69.23	29.03	27.27	9.00	10.00	50.00	45.00			
May 12	64.29	25.72	24.33	10.50	11.50	42.86	39.13			
June 9	64.29	30.00	28.13	8.00	9.00	56.25	50.00			
July 7	60.00	24.33	23.08	11.00	12.00	40.91	37.50			
Aug. 11	60.00	23.08	21.95	12.00	13.00	37.50	34.62			
Sept. 8	60.00	22.50	21.43	12.50	13.50	36.00	33.34			
Average	64.66	25.66	24.22	10.62	11.62	42.37	38.73	690.7	0.225	0.651
1915–16.										
Oct. 11	75.39	28.82	27.22	10.50	11.50	46.67	42.61			
Nov. 8	75.39	28.82	27.22	10.50	11.50	46.67	42.61			
Dec. 13	70.00	30.63	28.82	9.00	10.00	54.45	49.00			
Jan. 10	75.39	29.70	28.00	10.00	11.00	49.00	44.55			
Feb. 7	75.39	29.70	28.00	10.00	11.00	49.00	44.55			
Mar. 13	70.00	31.61	29.70	8.50	9.50	57.65	51.58			
Apr. 10	70.00	28.82	27.22	10.00	11.00	49.00	44.55			
May 8	70.00	28.82	27.22	10.00	11.00	49.00	44.55			
June 12	75.39	28.82	27.22	10.50	11.50	46.67	42.61			

Digitized by Google

Aug. 7	81.67	28.82	27.22	11.00	12.00	44.55	40.83			
Sept. 11	81.67	27.22	25.79	12.00	13.00	40.83	37.69			
Average	74.47	29.32	27.61	10.13	11.17	48.37	43.87	690.7	.245	.709
1920–21.										
Oct. 11	74.55	35.65	34.17	12.00	13.00	68.33	63.08			
Nov. 8	74.55	32.80	31.54	14.00	15.00	58.57	54.07			
Dec. 13	82.00	41.00	39.05	10.00	11.00	82.00	74.55			
Jan. 10	102.50	54.67	51.25	7.00	8.00	117.15	102.50			
Feb. 7	126.15	48.24	45.56	10.50	11.50	78.10	71.30			
Mar. 7	136.67	48.24	45.56	11.00	12.00	74.55	68.33			
Apr. 11	136.67	48.24	45.56	11.00	12.00	74.55	68.33			
May 9	136.67	54.67	51.25	9.00	10.00	91.11	82.00			
June 13	136.67	48.24	45.56	11.00	12.00	74.55	68.33			
July 11	126.15	45.56	43.16	11.50	12.50	71.30	65.60			
Aug. 8	136.67	48.24	45.56	11.00	12.00	74.55	68.33			
Sept. 12	164.00	48.24	45.56	12.00	13.00	68.33	63.08			
Average	111.87	45.13	42.78	10.84	11.84	75.65	69.26	690.7	.410	1.187

Digitized by Google

TABLE A79—Continued.

HAY, NO. 2 TIMOTHY, FROM COLUMBIA CROSSROADS, PA., TO NEW YORK, N. Y.

Period.	Price paid to grower at point of shipment, per ton.			Freight rate to destination, per ton.	Grower's mean price plus freight rate to destination, per ton.	Cash price per ton at destination (market).						Mean cash price at destination over or under grower's mean price plus freight rate to destination, per ton.	
						In car lots.			In less than carload lots.			In car lots (over).	In less than carload lots (over).
	High.	Low.	Mean.			High.	Low.	Mean.	High.	Low.	Mean.		
3	4	5	6	7	8 (6+7)	9	10	11	12	13	14	15 (11—8)	17 (14—8)
1912-13													
October			$12.35	$3.00	$15.35			$23.00			$27.00	$7.65	$11.65
November			13.50	3.00	16.50			22.50			28.00	6.00	11.50
December			14.00	3.00	17.00			22.00			26.00	5.00	9.00
January			14.00	3.00	17.00			20.50			25.00	3.50	8.00
February			13.50	3.00	16.50			21.00			25.00	4.50	8.50
March			13.00	3.00	16.00			21.00			26.00	5.00	10.00
April			12.75	3.00	15.75			22.00			27.00	6.25	11.25
May			13.00	3.00	16.00			21.00			25.00	5.00	9.00
June			13.00	3.00	16.00			21.00			26.00	5.00	10.00
July			14.00	3.00	17.00			21.00			25.00	4.00	8.00
August			14.75	3.00	17.75			22.00			27.00	4.25	9.25
September			15.00	3.00	18.00			21.00			26.00	3.00	8.00
Average	$15.00	$12.35	13.57	3.00	16.57	$23.00	$20.50	21.50	$28.00	$25.00	26.08	4.93	9.51
1915-19													
October			12.00	3.16	15.16			26.00			31.00	10.84	15.84
November			15.00	3.16	18.16			25.00			30.00	6.84	11.84
December			15.00	3.16	18.16			25.50			31.50	7.34	13.34
January			14.25	3.16	17.41			25.50			30.00	8.09	12.59
February			13.50	3.16	16.66			27.00			31.00	10.34	14.34
March			12.00	3.16	15.16			28.00			33.00	12.84	17.84
April			13.25	3.16	16.41			30.00			34.00	12.59	17.59
May			14.50	3.16	17.66			30.00			35.00	12.34	17.34
June			15.35	3.16	18.51			27.00			32.00	8.49	13.49

Digitized by Google

August			15.25	3.16	18.41			25.00			30.00	6.59	11.59
September			15.50	3.16	18.66			20.00			24.00	1.34	5.34
Average	15.50	12.00	14.22	3.16	17.38	30.00	20.00	26.00	35.00	24.00	30.87	8.62	13.49
1920-21.													
October			20.00	6.30	26.30			42.00			45.00	15.70	18.70
November			20.00	6.30	26.30			36.00			44.00	9.70	17.70
December			20.00	6.30	26.30			36.00			43.00	9.70	16.70
January			20.00	6.30	26.30			30.00			37.00	3.70	10.70
February			19.50	6.30	25.80			32.00			37.00	6.20	11.20
March			18.50	6.30	24.80			32.00			35.00	7.20	10.20
April			18.00	6.30	24.30			30.00			35.00	5.70	10.70
May			17.50	6.30	23.80			30.00			33.00	6.20	9.20
June			16.00	6.30	22.30			30.00			32.00	7.70	9.70
July			14.00	6.30	20.30			32.00			35.00	11.70	14.70
August			13.00	6.30	19.30			31.00			34.00	11.70	14.70
September			10.00	6.30	16.30			29.00			31.00	12.70	14.70
Average	20.00	10.00	17.21	6.30	23.51	42.00	29.00	32.50	45.00	31.00	36.75	8.99	13.24

Digitized by Google

TABLE A79—Continued.

HAY, NO. 2 TIMOTHY, FROM COLUMBIA CROSSROADS, PA., TO NEW YORK, N. Y.—Continued.

Period.	Per cent freight rate to mean price.			Spread between grower's mean price and mean cash price at destination.		Per cent freight rate is of spread between grower's mean price and mean cash price at destination.		Mileage (short line).	Average freight rate per hundredweight.	Average rate per ton-mile.
	At point of shipment (car lots).	At destination.								
		Car lots.	Less than carloads.	Car lots.	Less than carloads.	Car lots.	Less than carloads.			
3	19	21	22	23 (11—6 or 6—11)	24 (14—6 or 6—14)	25 (7÷23)	26 (7÷24)	27	28	29
1912–13									*Cents.*	*Cents.*
October	24.3	13.0	$11.1	$10.65	$14.65	28.2	20.5			
November	22.2	13.3	10.7	9.00	14.50	33.3	20.7			
December	21.4	13.6	11.5	8.00	12.00	37.5	25.0			
January	21.4	14.6	12.0	6.50	11.00	46.2	27.3			
February	22.2	14.3	12.0	7.50	11.50	40.0	26.1			
March	23.1	14.3	11.5	8.00	13.00	37.5	23.1			
April	23.5	13.6	11.1	9.25	14.25	32.4	21.1			
May	23.1	14.3	12.0	8.00	12.00	37.5	25.0			
June	23.1	14.3	11.5	8.00	13.00	37.5	23.1			
July	21.4	14.3	12.0	7.00	11.00	42.9	27.3			
August	20.3	13.6	11.1	7.25	12.25	41.4	24.5			
September	20.0	14.3	11.5	6.00	11.00	50.0	27.3			
Average	22.1	14.0	11.5	7.93	12.51	37.8	24.0	357	15.0	0.8404
1915–16										
October	26.3	12.2	10.2	14.00	19.00	22.6	16.6			
November	21.1	12.6	10.5	10.00	15.00	31.6	21.1			
December	21.1	12.4	10.0	10.50	16.50	30.1	19.2			
January	22.2	12.4	10.5	11.25	15.75	28.1	20.1			
February	23.4	11.7	10.2	13.50	17.50	23.4	18.1			
March	26.3	11.3	9.6	16.00	21.00	19.8	15.1			
April	23.9	10.9	9.3	15.75	20.75	20.1	15.2			
May	21.8	10.5	9.0	15.50	20.50	20.4	15.4			

Digitized by Google

July	21.1	13.2	10.9	9.00	14.00	35.1	22.6			
August	20.7	12.6	10.5	9.75	14.75	32.4	21.4			
September	20.4	15.8	13.2	4.50	8.50	70.2	37.2			
Average	22.2	12.2	10.2	11.78	16.65	26.8	19.0	357	15.8	.8852
1920-21.										
October	31.5	15.0	14.0	22.00	25.00	28.6	25.2			
November	31.5	17.5	14.3	16.00	24.00	39.4	26.3			
December	31.5	17.5	14.7	16.00	23.00	39.4	27.4			
January	31.5	21.0	17.0	10.00	17.00	63.0	37.1			
February	32.3	19.7	17.0	12.50	17.50	50.4	35.0			
March	19.5	19.7	18.0	13.50	16.50	46.7	38.2			
April	35.0	21.0	18.0	12.00	17.00	52.5	37.1			
May	36.0	21.0	19.1	12.50	15.50	50.4	40.7			
June	39.4	21.0	19.7	14.00	16.00	45.0	39.4			
July	45.0	19.7	18.0	18.00	21.00	35.0	30.0			
August	48.5	20.3	18.5	18.00	21.00	34.1	30.0			
September	63.0	21.7	20.3	19.00	21.00	33.2	30.0			
Average	36.6	19.4	17.1	15.29	19.54	41.2	32.2	357	31.5	1.7648

Digitized by Google

TABLE A80.—*Hay—Statement showing the average price paid producer, the average market prices, and the average transportation cost from typical producing points to typical markets.*

Point of destination (market).	Point of origin.	Period.	Price paid to grower at point of shipment, per ton.		Freight rate to destination, per ton.	Grower's mean price plus freight rate to destination, per ton.	Mean cash price per ton at destination (market).		Mean cash price at destination over or under grower's mean price plus freight rate to destination, per ton.			
									In car lots.		In less than car lots.	
			High.	Mean.			In car lots.	In less than car lots.	Over.	Under.	Over.	Under.
1	2	3	4	6	7	8 (6+7)	11	14	15 (11—8)	16 (8—11)	17 (14—8)	18 (8—14)
Minneapolis, Minn.:												
No. 2 timothy	8 typical points in Iowa, Minnesota, and Wisconsin.	1912-13	.....	$8.87	$2.40	$11.27	$13.17	$15.80	$1.90	.....	$4.53	.....
		1915-16	.....	9.41	2.33	11.94	13.81	17.28	2.07	.....	5.54	.....
		1920-21	.....	13.21	4.06	17.27	17.88	21.67	.61	.....	4.40	.....
No. 1 clover	5 typical points in Iowa and Wisconsin.	1912-13	.....	9.55	2.92	12.47	11.79	14.90	.....	$0.68	2.43	.....
		1915-16	.....	10.54	3.08	13.62	12.58	15.83	.....	1.04	2.21	.....
		1920-21	.....	12.37	5.28	17.65	16.93	20.46	.....	.72	2.81	.....
No. 1 alfalfa	2 typical points in South Dakota and Wisconsin.	1912-13	.....	12.66	4.20	16.86	15.60	19.29	.....	1.26	2.43	.....
		1915-16	.....	16.55	4.33	20.88	16.46	20.29	.....	4.42	.....	$0.59
		1920-21	.....	19.39	6.80	26.19	22.25	25.96	.....	3.94	.....	.23
No. 1 timothy	5 typical points in Iowa and Wisconsin.	1912-13	.....	11.54	2.92	14.46	14.50	17.37	.04	.....	2.91	.....
		1915-16	.....	12.40	3.08	15.48	15.00	18.55	.....	.48	3.07	.....
		1920-21	.....	14.69	5.28	19.97	19.96	23.81	.....	.01	3.84	.....
No. 1 wild	4 typical points in South Dakota and Wisconsin.	1912-13	.....	5.82	3.48	9.30	12.46	15.24	3.16	.....	5.94	.....
		1915-16	.....	6.73	3.58	10.31	13.77	17.36	3.46	.....	7.05	.....
		1920-21	.....	6.61	6.08	12.69	16.38	20.22	3.68	.....	7.53	.....
Kansas City, Mo.:												
No. 1 prairie	5 typical points in Kansas	1912-13	.....	8.59	1.78	10.37	11.07	16.08	.70	.....	5.71	.....
		1915-16	.....	6.22	1.79	8.01	8.93	13.93	.92	.....	5.92	.....
		1920-21	.....	9.43	3.00	12.43	13.75	18.56	1.32	.....	6.13	.....
No. 1 alfalfa	7 typical points in Kansas	1912-13	.....	11.38	1.94	13.32	14.14	19.15	.82	.....	5.83	.....
		1915-16	.....	10.55	1.94	12.49	13.45	18.45	.96	.....	5.96	.....
		1920-21	.....	16.42	3.31	19.73	21.08	27.28	1.35	.....	7.55	.....
No. 1 wild	8 typical points in Kansas	1912-13	.....	8.28	2.08	10.36	11.08	16.08	.72	.....	5.72	.....
		1915-16	.....	6.19	2.08	8.27	8.93	13.93	.66	.....	5.16	.....
		1920-21	.....	8.21	3.55	11.76	13.75	17.78	1.99	.....	6.02	.....
Chicago, Ill.:												
No. 1 timothy	6 typical points in Wisconsin	1912-13	.....	11.81	2.57	14.38	19.58	20.96	5.20	.....	6.58	.....
		1915-16	.....	12.03	2.57	14.60	19.96	21.04	5.84	.....	6.44	.....
		1920-21	.....	16.57	6.33	23.90	28.92	29.92	5.02	.....	6.02	.....

Digitized by Google

No. 2 timothy	Minnesota, and Wisconsin.	1915-16	.....	9.30	3.21	12.51	16.62	17.75	4.11	.....	5.24	.....
		1920-21	.....	13.55	5.63	19.18	24.10	25.26	4.92	.....	6.06	.....
No. 1 wild	8 typical points in Nebraska and Wisconsin.	1912-13	.....	6.54	3.65	10.19	17.58	18.58	7.39	.....	8.39	.....
		1915-16	.....	6.21	3.90	10.11	16.73	17.75	6.62	.....	7.64	.....
		1920-21	.....	6.93	6.55	13.48	18.17	19.17	4.69	.....	5.69	.....
New York, N. Y.:												
No. 1 timothy	4 typical points in Ohio and New York.	1912-13	.....	10.80	4.03	14.83	21.34	25.39	6.51	.....	10.56	.....
		1915-16	.....	12.50	4.25	16.75	25.92	30.11	9.17	.....	13.36	.....
		1920-21	.....	14.64	8.40	23.04	32.57	36.36	9.53	.....	13.32	.....
No. 2 timothy	5 typical points in Pennsylvania and New York.	1912-13	.....	13.58	3.04	16.62	19.36	23.08	2.74	.....	6.46	.....
		1915-16	.....	14.68	3.20	17.88	24.00	27.77	6.12	.....	9.89	.....
		1920-21	.....	18.46	6.42	24.88	30.40	34.30	5.52	.....	9.42	.....

Digitized by Google

TABLE A80—*Hay—Statement showing the average price paid producer, the average market prices, and the average transportation cost from typical producing points to typical markets*—Continued.

Point of destination (market).	Point of origin.	Period.	Per cent freight rate to mean price.			Spread between grower's mean price and mean cash price at destination.		Per cent freight rate is of spread between grower's mean price and mean cash price at destination.		Short-line mileage.
			At point of shipment, car lots.	At destination.						
				Car lots.	Less than car lots.	Car lots.	Less than car lots.	Car lots.	Less than car lots.	
1	2	3	19	21	22	23 (11−6 or 6−11)[1]	24 (14−6 or 6−14)[1]	25 (7÷23)[1]	26 (7÷24)[1]	28
Minneapolis, Minn.:										
No. 2 timothy	8 typical points in Iowa, Minnesota, and Wisconsin.	1912-13	27.1	18.2	15.2	$4.30	$6.93	55.8	34.6	157.8
		1915-16	24.8	16.9	13.5	4.40	7.87	53.0	30.0	157.8
		1920-21	30.8	22.7	18.7	4.67	8.46	86.9	48.0	157.8
No. 1 clover	5 typical points in Iowa and Wisconsin.	1912-13	30.6	24.8	19.6	2.24	5.35	.....	34.6	244.5
		1915-16	29.2	24.5	19.5	2.04	5.29	.....	58.2	244.5
		1920-21	42.7	31.2	26.8	4.56	8.09	.....	65.3	244.5
No. 1 alfalfa	2 typical points in South Dakota and Wisconsin.	1912-13	33.2	26.9	21.8	2.94	6.63	.....	63.3	403.1
		1915-16	26.2	26.3	21.3	.09	3.74	.....	.....	403.1
		1920-21	35.1	30.6	26.2	2.86	6.57	.....	.....	403.1
No. 1 timothy	5 typical points in Iowa and Wisconsin.	1912-13	25.3	20.1	16.8	2.96	5.83	98.6	50.1	244.5
		1915-16	24.8	20.5	16.6	2.60	6.15	.....	50.1	244.5
		1920-21	35.9	26.5	22.2	5.27	9.12	.....	57.9	244.5
No. 1 wild	4 typical points in South Dakota and Wisconsin.	1912-13	59.8	27.9	22.8	6.64	9.42	52.2	36.9	380.1
		1915-16	53.2	26.0	20.6	7.04	10.63	50.9	33.7	390.1
		1920-21	92.0	37.1	30.1	9.77	13.61	62.2	44.7	360.1
Kansas City, Mo.:										
No. 1 prairie	5 typical points in Kansas	1912-13	20.7	16.1	11.1	2.48	7.49	71.8	33.7	104.8
		1915-16	28.8	20.0	12.8	2.71	7.71	66.1	33.2	104.8
		1920-21	31.8	21.8	16.2	4.32	9.13	69.4	32.9	101.8
No. 1 alfalfa	7 typical points in Kansas	1912-13	17.0	13.7	10.1	2.76	7.77	70.3	25.0	134.2
		1915-16	18.4	14.4	10.5	2.90	7.90	61.9	24.6	134.2
		1920-21	20.2	15.7	12.1	4.66	10.86	71.0	30.5	134.2
No. 1 wild	8 typical points in Kansas	1912-13	25.1	18.8	13.0	2.80	7.80	74.3	26.7	113.7
		1915-16	33.6	23.3	14.9	2.74	7.74	75.9	26.9	113.7
		1920-21	43.2	25.8	20.0	5.54	9.37	64.1	37.1	113.7
Chicago, Ill.:										
No. 1 timothy	6 typical points in Wisconsin	1912-13	41.8	13.1	12.3	7.77	9.15	33.1	28.1	186.6
		1915-16	21.4	12.9	12.2	7.91	9.01	32.5	28.5	186.6
		1920-21	26.1	15.0	14.5	12.58	13.35	35.1	32.4	186.6

Digitized by Google

No. 2 timothy	5 typical points in Illinois, Iowa, Minnesota, and Wisconsin.	1915-16	34.5	19.3	18.1	7.32	8.45	43.9	38.0	303.5
		1920-21	41.5	23.4	22.3	10.55	11.69	53.4	48.2	303.5
No. 1 wild	8 typical points in Nebraska and Wisconsin.	1912-13	55.8	20.8	19.6	11.04	12.04	33.1	30.1	486.6
		1915-16	62.8	23.3	22.0	10.52	11.54	37.1	33.8	486.6
		1920-21	94.5	36.0	34.2	11.24	12.24	58.3	53.5	486.6
New York, N. Y.:										
No. 1 timothy	4 typical points in Ohio and New York.	1912-13	37.3	18.9	15.9	10.54	14.59	38.2	27.6	531.0
		1915-16	34.0	16.4	14.1	13.42	17.61	31.7	24.1	531.0
		1920-21	57.4	25.8	23.1	17.93	21.72	46.9	38.7	531.0
No. 2 timothy	5 typical points in Pennsylvania and New York.	1912-13	22.4	15.7	13.2	5.78	9.50	52.6	32.0	405.0
		1915-16	21.8	13.3	11.5	9.32	13.09	34.3	24.5	405.0
		1920-21	34.8	21.1	18.7	11.94	15.84	53.8	40.5	405.0

[1] Columns 23 and 24: When column 6 is in excess of column 11 or column 14, result in italics. Columns 25 and 26: Compute percentages only when spread (columns 23 and 24) is in excess of freight rate (column 7).

Digitized by Google

TABLE A87.—*Live stock.*

CATTLE, FROM RUTHTON, MINN., TO SIOUX CITY, IOWA.

Period.	Number of head per car.	Total weight of stock per car.	Gross proceeds per car.	Deductions from gross—				Net proceeds to shippers.		Ratio (per cent) to gross proceeds of—				Per 100 pounds.				
				Freight charges per car.	Feed and yardage charges per car.	Commission charges per car.	Total.	Per car.	Per 100 pounds.	Column 7.	Column 8.	Column 9.	Column 10.					
3	4	5	6	7	8	9	10	11 (6–10)	12 (11÷5)	13	14	15	16	6	7	8	9	10
1912–13.																		
October	31	22,620	$1,080.80	$32.70	$16.63	$12.10	$61.43	$1,019.37	$4.51	3.02	1.54	1.12	5.68	$4.78	$0.15	$0.07	$0.05	$0.27
November	15	21,615	1,109.30	31.95	17.10	12.00	61.05	1,048.25	4.85	2.88	1.54	1.08	5.50	5.13	.15	.08	.05	.28
January	31	23,845	1,485.19	34.50	17.95	14.90	67.35	1,417.84	5.95	2.32	1.21	1.00	4.53	6.23	.15	.07	.06	.28
February	42	23,660	1,604.20	39.00	15.10	16.30	70.40	1,533.80	5.75	2.43	.94	1.02	4.39	6.02	.15	.06	.06	.27
March	40	22,225	1,673.94	34.87	16.45	13.85	65.17	1,608.77	7.24	2.08	.98	.83	3.89	7.53	.16	.07	.06	.29
April	28	21,530	1,362.72	33.00	8.50	14.00	55.50	1,307.22	6.07	2.42	.62	1.03	4.07	6.33	.15	.04	.07	.26
May	23	27,680	2,103.15	40.35	10.83	15.45	66.63	2,036.52	7.36	1.92	.51	.73	3.16	7.60	.15	.04	.05	.24
June	42	25,770	1,723.88	37.50	14.50	15.85	67.85	1,656.03	6.43	2.18	.84	.92	3.94	6.69	.15	.05	.06	.26
July	29	18,070	1,110.42	30.75	12.40	14.00	57.15	1,053.77	5.83	2.77	1.12	1.26	5.15	6.15	.17	.07	.08	.32
Average	31	23,335	1,472.68	34.96	14.38	14.27	63.61	1,409.07	6.04	2.37	.98	.97	4.32	6.31	.15	.06	.06	.27
1915–16.																		
October	41	25,200	1,338.82	36.60	17.85	15.60	70.05	1,268.77	5.03	2.73	1.33	1.17	5.23	5.31	.15	.07	.06	.28
November	37	33,020	1,806.10	49.00	23.70	14.00	86.70	1,719.40	5.21	2.71	1.31	.78	4.80	5.47	.15	.07	.04	.26
December	26	19,900	1,089.04	39.00	10.40	13.00	62.40	1,026.64	5.16	3.58	.95	1.19	5.72	5.47	.20	.05	.06	.31
January	28	27,730	1,454.61	40.80	16.80	16.85	74.45	1,380.16	4.98	2.80	1.15	1.16	5.11	5.25	.15	.06	.06	.27
February	23	18,390	1,083.52	33.00	9.15	11.50	53.65	1,029.87	5.60	3.05	.84	1.06	4.95	5.89	.18	.05	.06	.29
March	32	22,155	1,522.57	32.85	13.12	13.70	59.67	1,462.90	6.60	2.16	.86	.90	3.92	6.87	15	.06	.06	.27
April	36	27,270	1,658.82	39.00	15.10	16.40	70.50	1,588.32	5.82	2.35	.91	.99	4.25	6.08	.14	.06	.06	.26
May	34	18,935	1,358.21	30.75	13.50	12.50	56.75	1,301.46	6.87	2.26	.99	.92	4.17	7.17	.16	.07	.07	.30
June	33	23,860	1,641.38	34.65	11.30	15.40	61.35	1,580.03	6.62	2.11	.69	.94	3.74	6.88	.15	.05	.06	.26
July	40	24,780	1,271.90	36.00	14.40	15.35	65.75	1,206.15	4.87	2.83	1.13	1.21	5.17	5.13	.14	.06	.06	.26
August	35	23,100	1,406.90	33.45	15.85	14.55	63.85	1,343.05	5.81	2.38	1.13	1.03	4.54	6.09	.15	.07	.06	.28
September	26	22,900	1,816.10	40.00	23.70	14.00	86.70	1,729.40	5.78	2.70	1.30	.77	4.77	6.07	.16	.08	.06	.29
Average	33	24,520	1,454.00	37.84	15.41	14.40	67.65	1,386.35	5.65	2.60	1.06	.99	4.65	5.93	.16	.06	.06	.28

Digitized by Google

1920-21.																		
November	42	23,340	1,086.20	57.78	21.20	26.10	105.18	981.02	4.20	5.32	1.96	2.40	9.68	4.65	.25	.09	.11	.45
December	29	21,700	1,052.81	57.78	21.30	26.10	105.18	947.63	4.37	5.49	2.02	2.48	9.99	4.85	.26	.10	.12	.48
January	32	20,200	1,071.58	57.78	15.25	25.00	98.03	973.55	4.82	5.39	1.42	2.33	9.14	5.31	.29	.08	.12	.49
February	44	26,250	1,426.84	66.84	20.86	27.13	114.83	1,312.01	5.00	4.68	1.46	1.90	8.04	5.44	.26	.08	.10	.44
March	43	22,640	1,379.81	57.78	24.16	25.30	107.22	1,272.57	5.62	4.19	1.75	1.83	7.77	6.10	.26	.11	.11	.48
April	33	27,350	1,547.07	71.18	13.90	27.90	112.98	1,434.09	5.15	4.60	.90	1.80	7.30	5.56	.26	.05	.10	.41
May	40	23,785	1,298.15	60.42	17.10	25.85	103.37	1,194.78	5.02	4.65	1.32	1.99	7.96	5.46	.26	.07	.11	.44
June	28	22,830	1,494.34	57.78	21.30	26.10	105.18	1,389.16	6.08	3.87	1.43	1.75	7.05	6.55	.26	.09	.12	.47
August	23	21,750	1,592.23	57.78	21.30	26.10	105.18	1,487.05	6.84	3.63	1.34	1.64	6.61	7.32	.26	.10	.12	.48
September	25	8,100	514.87	20.66	3.91	7.50	32.07	482.80	5.96	4.01	.76	1.46	6.23	6.36	.26	.05	.09	.40
Average	34	21,845	1,246.39	56.58	18.04	24.31	98.93	1,147.46	5.25	4.54	1.45	1.95	7.94	5.70	.26	.08	.11	.45

CATTLE, MEDIUM TO LIGHT, FROM CLIO, IOWA, TO KANSAS CITY STOCKYARDS, MO.

1912-13.																		
January	30	23,270	$1,367.12	$32.48	$8.95	$15.00	$56.43	$1,310.69	$5.63	2.38	0.65	1.10	4.13	$5.87	$0.14	$0.04	$0.06	$0.24
February	33	24,690	1,705.55	34.16	18.95	15.00	68.11	1,637.44	6.63	2.00	1.12	.88	4.00	6.91	.14	.08	.06	.28
March	33	26,650	1,912.92	35.63	15.25	15.00	65.88	1,847.04	6.93	1.86	.80	.78	3.44	7.18	.13	.06	.06	.25
April	29	28,200	1,506.74	32.84	7.80	15.00	55.14	1,451.60	5.15	2.15	.52	.99	3.66	5.34	.12	.02	.05	.19
May	24	19,050	1,489.30	26.52	11.50	14.40	51.42	1,437.88	7.55	1.71	.78	.97	3.46	7.82	.13	.06	.08	.27
June	36	27,560	2,178.93	32.06	18.17	15.30	65.53	2,113.40	7.67	1.47	.83	.71	3.01	7.91	.12	.07	.05	.24
July	17	17,310	1,240.25	28.70	8.75	12.00	49.45	1,190.80	6.88	2.31	.72	.97	4.00	7.16	.16	.05	.07	.28
August	23	19,780	1,541.90	28.70	11.25	13.80	53.75	1,488.15	7.52	1.86	.73	.90	3.49	7.80	.15	.06	.07	.28
Average	28	23,314	1,617.84	31.20	12.58	14.43	58.21	1,559.63	6.69	1.93	.78	.88	3.59	6.94	.13	.06	.06	.25
1915-16.																		
October	22	19,370	1,162.52	30.80	8.60	14.40	53.80	1,108.72	5.72	2.65	.74	1.24	4.63	6.00	.16	.05	.07	.28
December	43	19,930	1,445.27	29.95	14.20	15.00	59.15	1,386.12	6.95	2.07	.98	1.04	4.09	7.25	.15	.07	.08	.30
February	36	19,450	1,197.83	28.70	10.45	15.00	54.15	1,143.68	5.88	2.40	.87	1.25	4.52	6.16	.15	.05	.08	.28
March	41	25,740	1,839.34	34.54	11.20	15.00	60.74	1,778.60	6.91	1.88	.61	.81	3.30	7.14	.13	.04	.06	.23
April	28	18,130	1,340.15	28.80	20.19	15.00	63.99	1,276.16	7.04	2.15	1.51	1.13	4.79	7.39	.16	.11	.08	.35
July	33	18,920	1,046.02	31.42	13.95	15.00	60.37	985.65	5.21	3.00	1.33	1.44	5.77	5.53	.17	.07	.08	.32
August	27	20,560	1,558.92	30.95	12.75	15.00	58.70	1,500.22	7.30	1.99	.82	.95	3.76	7.58	.15	.06	.07	.28
Average	33	20,300	1,370.01	30.74	13.05	14.91	58.70	1,311.31	6.46	2.24	95	1.09	4.28	6.75	.15	.07	.07	.29
1920-21.																		
October	29	25,090	1,624.84	58.85	14.70	22.80	96.35	1,528.49	6.09	3.62	.91	1.40	5.93	6.47	.23	.06	.09	.38
November	33	24,450	1,238.18	58.10	16.20	26.40	100.70	1,137.48	4.65	4.69	1.81	2.14	8.14	5.06	.24	.06	.11	.41
December	27	18,760	1,043.95	53.25	12.10	21.60	86.95	957.00	5.10	5.10	1.16	2.07	8.33	5.56	.28	.06	.12	.46
January	34	22,310	1,442.80	52.22	18.25	22.00	92.47	1,350.33	6.05	3.62	1.26	1.53	6.41	6.46	.23	.08	.10	.41
February	34	24,650	1,369.63	57.87	22.50	26.00	106.37	1,263.26	5.12	4.22	1.64	1.90	7.76	5.55	.23	.09	.11	.43
March	35	21,980	1,735.30	53.32	23.25	22.00	98.57	1,636.73	7.44	3.07	1.34	1.27	5.68	7.89	.24	.11	.10	.45
April	28	19,390	1,223.65	53.32	12.45	20.40	86.17	1,137.48	5.87	4.36	1.02	1.66	7.04	6.31	.27	.06	.11	.44
May	25	15,760	1,219.89	53.32	10.23	18.40	81.95	1,137.94	7.22	4.37	.83	1.52	6.72	7.74	.34	.06	.12	.52
July	30	19,090	1,148.46	53.32	14.65	20.05	88.02	1,060.44	5.55	4.64	1.28	1.75	7.67	6.01	.28	.08	.10	.46
September	23	15,030	837.86	53.32	10.30	17.55	81.17	756.69	5.03	6.36	1.23	2.10	9.69	5.57	.35	.07	.12	.54
Average	30	20,651	1,288.46	54.69	15.46	21.72	91.87	1,196.59	5.79	4.24	1.20	1.69	7.13	6.24	.27	.07	.11	.45

Digitized by Google

TABLE A87.—*Live stock*—Continued.

BEEF STEERS FROM BAKER TO PORTLAND, OREG.

Period.	Number of head per car.	Total weight of stock per car.	Gross proceeds per car.	Deductions from gross—				Net proceeds to shippers.		Ratio (per cent) to gross proceeds of—				Per 100 pounds.				
				Freight charges per car.	Feed and yardage charges per car.	Commission charges per car.	Total.	Per car.	Per 100 pounds.	Column 7.	Column 8.	Column 9.	Column 10.					
3	4	5	6	7	8	9	10	11 (6-10)	12 (11÷5)	13	14	15	16	6	7	8	9	10
1912-13																		
November	26	30,460	$2,132.20	$81.00	$26.12	$10.00	$117.12	$2,015.08	$6.62	3.80	1.22	0.47	5.49	$7.06	$0.26	$0.09	$0.03	$0.38
December	26	29,360	2,039.05	81.00	14.65	10.00	105.65	1,933.40	6.59	3.97	.72	.49	5.18	6.95	.28	.05	.03	.36
January	25	29,760	2,359.65	81.00	14.67	10.00	105.67	2,253.98	7.57	3.43	.62	.42	4.47	7.92	.27	.05	.03	.35
February	26	30,941	2,320.57	81.00	18.00	10.00	109.00	2,211.57	7.15	3.49	.78	.43	4.70	7.50	.26	.06	.03	.35
March	24	29,590	2,130.48	81.00	18.00	10.00	109.00	2,021.48	6.83	3.80	.84	.47	5.11	7.20	.28	.06	.03	.37
April	25	29,950	2,366.05	81.00	18.68	10.00	109.68	2,256.37	7.53	3.42	.79	.42	4.63	7.90	.27	.06	.04	.37
June	25	25,040	1,878.00	81.00	18.88	10.00	109.88	1,768.12	7.06	4.31	1.01	.53	5.85	7.50	.32	.08	.04	.44
July	26	31,630	2,574.68	81.00	17.07	10.00	108.07	2,466.61	7.80	3.15	.66	.40	4.21	8.14	.26	.05	.03	.34
September	24	25,950	1,881.37	81.00	21.73	15.00	117.73	1,763.64	6.80	4.31	1.15	.80	6.26	7.25	.30	.08	.06	.45
Average	25	29,187	2,186.90	81.00	18.64	10.56	110.20	2,076.70	7.12	3.70	.85	.48	5.03	7.49	.28	.06	.03	.37
1915-16																		
October	27	27,480	1,229.37	81.00	15.41	15.00	111.41	1,117.96	4.07	6.59	1.25	1.22	9.06	4.47	.30	.05	.05	.40
November	28	29,580	1,952.07	81.00	23.74	15.00	119.74	1,832.33	6.19	4.15	1.22	.77	6.14	6.60	.28	.08	.05	.41
December	25	28,670	1,853.55	81.00	18.45	15.00	114.45	1,739.10	6.07	4.37	1.00	.81	6.18	6.46	.28	.06	.05	.39
January	27	30,360	2,201.10	81.00	30.03	15.00	126.03	2,075.07	6.83	3.68	1.36	.68	5.72	7.25	.27	.10	.05	.42
February	30	31,185	2,201.18	81.00	27.30	15.00	123.30	2,077.88	6.66	3.68	1.24	.68	5.60	7.06	.26	.09	.05	.40
April	27	28,530	2,559.75	81.00	18.00	15.00	114.00	2,445.75	8.57	3.16	.70	.59	4.45	8.96	.29	.06	.05	.40
June	28	27,080	1,518.15	81.00	19.25	15.00	115.25	1,402.90	5.18	5.34	1.27	.99	7.60	5.61	.30	.07	.06	.43
Average	27	28,984	1,930.74	81.00	21.74	15.00	117.74	1,813.00	6.26	4.20	1.13	.78	6.11	6.66	.28	.07	.05	.40
1920-21.																		
October	25	26,550	1,991.25	130.27	23.02	18.75	172.04	1,819.21	6.85	6.54	1.16	.94	8.64	7.50	.49	.09	.07	.65
November	25	24,750	1,980.00	127.72	21.25	18.75	167.72	1,812.28	7.32	6.45	1.07	.95	8.47	8.00	.52	.08	.08	.68
December	26	28,360	2,056.10	124.63	19.28	18.75	162.66	1,893.44	6.68	6.06	.94	.91	7.91	7.25	.44	.07	.06	.57
January	25	26,600	2,128.00	124.63	26.88	18.75	170.26	1,957.74	7.36	5.86	1.26	.88	8.00	8.00	.47	.10	.07	.64
February	26	29,220	2,073.28	124.63	20.17	18.75	163.55	1,909.73	6.54	6.01	.97	.90	7.88	7.10	.43	.07	.06	.56
March	27	28,150	2,140.75	124.63	30.00	18.75	173.38	1,973.37	7.01	5.80	1.40	.87	8.07	7.61	.44	.11	.07	.69
April	25	28,500	2,184.84	124.63	19.75	18.75	163.13	2,021.71	7.09	5.70	.90	.85	7.46	7.66	.44	.07	.06	.57

Digitized by Google

May	28	27,420	2,015.37	124.63	22.07	18.75	165.45	1,849.92	6.75	6.15	1.09	.85	8.20	7.35	.45	.08	.07	.60
June	25	27,770	1,666.20	124.63	22.46	18.75	165.84	1,500.36	5.40	7.48	1.35	1.12	9.95	6.00	.45	.08	.07	.60
August	26	29,035	1,690.47	124.63	18.20	18.75	161.58	1,528.89	5.27	7.37	1.08	1.11	9.56	5.82	.43	.06	.06	.55
September	26	25,818	1,419.99	124.63	17.62	18.75	161.00	1,258.99	4.88	8.78	1.24	1.32	11.34	5.50	.48	.07	.07	.60
Average	26	27,476	1,941.11	125.42	21.88	18.75	166.05	1,775.06	6.46	6.46	1.13	.96	8.55	7.07	.46	.08	.07	.61

HOGS FROM GARRETSON, S. DAK., TO SIOUX CITY, IOWA.

1912-13.																	
November	68	19,200	$1,472.24	$31.83	$10.16	$9.00	$50.99	$1,421.25	$7.40	2.16	0.69	0.61	3.46	$7.67	$0.17	$0.05	$0.05	$0.27
December	83	19,800	1,400.12	27.71	7.62	9.00	44.33	1,355.79	6.85	1.98	.54	.64	3.16	7.07	.14	.04	.04	.22
January	53	15,800	1,145.50	23.20	7.54	8.00	38.74	1,106.76	7.00	2.03	.66	.70	3.39	7.25	.15	.05	.05	.25
February	85	16,990	1,367.69	24.65	9.10	8.45	42.20	1,325.49	7.80	1.80	.67	.62	3.09	8.05	.15	.05	.05	.25
March	65	15,530	1,343.34	23.20	8.50	8.00	39.70	1,303.64	8.39	1.73	.63	.60	2.96	8.65	.15	.06	.06	.26
April	81	21,780	1,915.02	31.18	11.78	10.85	53.81	1,861.21	8.55	1.63	.62	.57	2.82	8.79	.14	.05	.05	.24
May	65	15,460	1,280.38	23.20	7.50	8.00	38.70	1,241.68	8.03	1.81	.59	.62	3.02	8.28	.15	.05	.05	.25
June	59	17,650	1,477.90	25.23	7.02	8.80	41.05	1,436.85	8.14	1.71	.47	.60	2.78	8.37	.14	.04	.05	.23
July	65	19,030	1,617.55	27.12	11.50	9.50	48.12	1,569.43	8.24	1.68	.71	.59	2.98	8.50	.15	.06	.05	.26
August	88	17,670	1,385.60	25.23	11.26	8.70	45.19	1,340.41	7.59	1.82	.81	.63	3.26	7.84	.14	.06	.05	.25
September	82	16,610	1,332.85	24.65	8.86	8.30	41.81	1,291.04	7.77	1.85	.66	.62	3.13	8.02	.15	.05	.05	.25
Average	72	17,775	1,430.74	26.11	9.17	8.78	44.06	1,386.68	7.80	1.82	.64	.61	3.07	8.05	.15	.05	.05	.25
1915-16.																	
November	86	13,750	818.12	24.65	13.18	10.20	48.03	770.09	5.60	3.01	1.61	1.25	5.87	5.95	.17	.10	.08	.35
December	112	18,690	1,119.00	26.68	17.30	9.30	53.28	1,065.72	5.70	2.38	1.55	.83	4.76	5.98	.14	.09	.05	.28
January	60	15,900	1,135.42	23.20	30.10	8.00	61.30	1,074.12	6.73	2.04	2.65	.70	5.39	7.11	.14	.19	.05	.38
March	78	18,360	1,700.04	26.25	14.54	9.15	49.94	1,650.10	8.99	1.54	.86	.54	2.94	9.26	.14	.08	.05	.27
April	81	17,520	1,653.00	24.94	13.78	8.75	47.47	1,605.53	9.16	1.51	.83	.53	2.87	9.43	.14	.08	.05	.27
May	71	16,970	1,588.54	26.65	11.98	8.45	47.08	1,541.46	9.08	1.68	.75	.53	2.96	9.36	.16	.07	.05	.28
June	99	20,000	1,848.63	28.57	14.22	10.00	52.79	1,795.84	8.98	1.55	.77	.54	2.86	9.24	.14	.07	.05	.26
July	52	16,650	1,479.43	24.65	7.46	8.30	40.41	1,439.02	8.64	1.67	.50	.56	2.73	8.89	.15	.05	.05	.25
August	66	16,950	1,611.08	24.73	9.63	8.45	42.81	1,568.27	9.25	1.53	.60	.52	2.65	9.51	.15	.06	.05	.26
September	58	12,900	1,341.46	23.20	7.99	8.00	39.19	1,302.27	10.10	1.73	.60	.60	2.93	10.40	.18	.06	.06	.30
Average	76	16,775	1,429.47	25.35	14.02	8.86	48.23	1,381.24	8.23	1.77	.98	.62	3.37	8.52	.15	.09	.05	.29
1920-21																	
October	69	17,660	2,177.19	43.91	16.22	20.70	80.83	2,096.36	11.87	2.02	.74	.95	3.71	12.33	.25	.09	.12	.46
November	58	13,340	1,253.95	42.90	21.16	17.40	81.46	1,172.49	8.79	3.42	1.69	1.39	6.50	9.40	.32	.16	.13	.61
December	79	16,250	1,418.05	42.90	22.68	22.00	87.58	1,330.47	8.19	3.03	1.60	1.55	6.18	8.73	.26	.14	.14	.54
February	60	17,180	1,256.85	44.65	12.55	16.00	73.20	1,183.65	6.89	3.55	1.00	1.27	5.82	7.31	.26	.07	.09	.42
March	65	12,330	1,254.82	40.27	11.15	16.00	67.42	1,187.40	9.63	3.21	.89	1.28	5.38	10.18	.33	.09	.13	.55
April	51	14,990	1,066.80	39.64	8.47	15.30	63.41	1,003.39	6.69	3.72	.79	1.43	5.94	7.12	.27	.06	.10	.43
July	65	16,440	1,399.02	44.65	16.15	16.00	76.80	1,322.22	8.04	3.19	1.15	1.14	5.48	8.51	.27	.10	.10	.47
August	60	17,180	1,256.85	44.65	12.55	16.00	73.20	1,183.65	6.89	3.55	1.00	1.27	5.82	7.31	.26	.07	.09	.42
September	50	11,790	854.77	44.65	10.35	15.00	70.00	784.77	6.65	5.22	1.21	1.75	8.18	7.25	.38	.09	.13	.60
Average	62	15,240	1,326.48	43.14	14.59	17.16	74.89	1,251.59	8.21	3.25	1.10	1.29	5.64	8.70	.28	.10	.11	.49

Digitized by Google

TABLE A87.—*Live stock*—Continued.

HOGS FROM JOY TO CHICAGO, ILL.

Period.	Number of head per car.	Total weight of stock per car.	Gross proceeds per car.	Deductions from gross—				Net proceeds to shippers.		Ratio (per cent) to gross proceeds of—				Per 100 pounds.				
				Freight charges per car.	Feed and yardage charges per car.	Commission charges per car.	Total.	Per car	Per 100 pounds.	Column 7.	Column 8.	Column 9.	Column 10.					
3	4	5	6	7	8	9	10	11 (6–10)	12 (11÷5)	13	14	15	16	6	7	8	9	10
1912–13.																		
October	47	13,880	$1,259.40	$24.31	.....	.....	$24.31	$1,235.09	$8.90	1.93	.....	.....	1.93	$9.07	$0.18	.....	.....	$0.18
November	66	18,200	1,407.40	26.03	.....	.....	26.03	1,381.37	7.59	1.84	.....	.....	1.84	7.73	.14	.....	.....	.14
December	75	17,970	1,302.82	25.69	.....	.....	25.69	1,277.13	7.11	1.97	.....	.....	1.97	7.25	.14	.....	.....	.14
January	66	17,570	1,308.96	25.13	.....	.....	25.13	1,283.83	7.31	1.92	.....	.....	1.92	7.45	.14	.....	.....	.14
February	65	18,360	1,544.66	26.25	.....	.....	26.25	1,518.41	8.27	1.70	.....	.....	1.70	8.41	.14	.....	.....	.14
March	93	24,070	2,144.45	34.42	.....	.....	34.42	2,110.03	8.77	1.60	.....	.....	1.60	8.91	.14	.....	.....	.14
April	66	18,050	1,596.78	25.81	.....	.....	25.81	1,570.97	8.70	1.62	.....	.....	1.62	8.85	.14	.....	.....	.14
May	52	13,590	1,134.83	24.31	.....	.....	24.31	1,110.52	8.17	2.14	.....	.....	2.14	8.35	.18	.....	.....	.18
June	64	17,490	1,472.47	25.01	.....	.....	25.01	1,447.46	8.28	1.70	.....	.....	1.70	8.42	.14	.....	.....	.14
July	82	17,670	1,629.58	25.27	.....	.....	25.27	1,604.31	9.08	1.55	.....	.....	1.55	9.22	.14	.....	.....	.14
August	60	16,820	1,429.70	24.31	.....	.....	24.31	1,405.39	8.36	1.70	.....	.....	1.70	8.50	.14	.....	.....	.14
September	64	17,600	1,473.19	25.17	.....	.....	25.17	1,448.02	8.23	1.71	.....	.....	1.71	8.37	.14	.....	.....	.14
Average	67	17,606	1,475.35	25.98	.....	.....	25.98	1,449.37	8.23	1.76	.....	.....	1.76	8.38	.15	.....	.....	.15
1915–16.																		
October	59	17,710	1,467.75	27.83	.....	.....	27.83	1,439.92	8.13	1.90	.....	.....	1.90	8.29	.16	.....	.....	.16
November	63	16,840	1,067.52	26.31	.....	.....	26.31	1,041.21	6.18	2.46	.....	.....	2.46	6.34	.16	.....	.....	.16
December	74	17,490	1,171.83	27.41	.....	.....	27.41	1,144.42	6.54	2.34	.....	.....	2.34	6.70	.16	.....	.....	.16
January	85	17,200	1,307.20	27.10	.....	.....	27.10	1,280.10	7.44	2.07	.....	.....	2.07	7.60	.16	.....	.....	.16
February	65	17,740	1,454.68	27.87	.....	.....	27.87	1,426.81	8.04	1.92	.....	.....	1.92	8.20	.16	.....	.....	.16
March	68	17,480	1,703.63	26.00	.....	.....	26.00	1,678.63	9.60	1.47	.....	.....	1.47	9.75	.14	.....	.....	.14
April	68	15,600	1,524.88	24.31	.....	.....	24.31	1,500.57	9.62	1.59	.....	.....	1.59	9.77	.16	.....	.....	.16
May	62	17,510	1,770.17	25.04	.....	.....	25.04	1,745.13	9.97	1.41	.....	.....	1.41	10.10	.14	.....	.....	.14
June	67	17,370	1,711.71	24.84	.....	.....	24.84	1,686.87	9.71	1.45	.....	.....	1.45	9.85	.14	.....	.....	.14
July	49	12,360	1,185.02	24.31	.....	.....	24.31	1,160.71	9.39	2.05	.....	.....	2.05	9.59	.20	.....	.....	.20
August	45	12,360	1,343.92	24.31	.....	.....	24.31	1,319.61	10.51	1.81	.....	.....	1.81	10.70	.19	.....	.....	.19
September	78	17,040	1,800.56	24.36	.....	.....	24.36	1,776.20	10.42	1.35	.....	.....	1.35	10.57	.14	.....	.....	.14
Average	65	16,406	1,469.07	25.72	.....	.....	25.72	1,443.35	8.74	1.76	.....	.....	1.76	8.89	.15	.....	.....	.15

Digitized by Google

October	47	20,300	2,030.17	46.20			46.20	1,942.97	11.22	2.32			2.32	11.47	.27		.27
November	46	17,320	1,989.17	46.20			50.53	1,638.37	6.95	2.99			2.99	7.16	.21		.21
December	76	23,590	1,688.90	50.53			44.65	1,562.59	9.25	2.78			2.78	9.51	.26		.26
January	63	16,900	1,607.24	44.65			44.65	1,635.41	9.65	2.66			2.66	9.92	.26		.26
February	83	16,940	1,680.06	44.65			55.08	1,808.54	8.81	2.96			2.96	9.08	.27		.27
March	74	20,480	1,858.62	55.08			47.84	1,382.61	7.75	3.34			3.34	8.02	.27		.27
April	65	17,330	1,430.45	47.84			46.40	1,291.39	7.71	3.47			3.47	7.98	.28		.28
May	71	16,760	1,337.79	46.40			46.53	1,445.57	8.33	3.12			3.12	8.60	.27		.27
June	80	17,350	1,492.10	46.53			48.04	1,629.86	9.11	2.86			2.86	9.37	.27		.27
July	58	17,900	1,677.90	48.04			46.40	1,328.11	8.05	3.38			3.38	8.33	.28		.28
August	54	16,500	1,374.51	46.40			46.40	1,001.72	5.85	4.42			4.42	6.13	.27		.27
September	45	17,110	1,048.12	46.40													
Average	66	18,301	1,678.12	48.08			48.08	1,630.04	8.91	2.86			2.86	9.17	.26		.26

HOGS FROM BAKER TO PORTLAND, OREG.

1912-13.																	
December	85	18,930	$1,366.79	$81.00	$23.40	$10.00	$114.40	$1,252.39	6.62	5.93	1.71	0.73	8.37	$7.22	$0.43	$0.12	$0.05	$0.60
January	94	17,920	1,406.72	81.00	16.99	10.00	107.99	1,298.73	7.25	5.76	1.21	.71	7.68	7.85	.45	.09	.06	.60
February	92	18,400	1,464.00	81.00	20.21	10.00	111.21	1,352.79	7.35	5.53	1.38	.68	7.59	7.95	.44	.11	.05	.60
March	103	16,080	1,405.25	81.00	21.53	10.00	112.53	1,392.72	8.05	5.76	1.53	.71	8.00	8.75	.51	.13	.06	.70
May	95	16,950	1,523.94	81.00	25.03	10.00	116.03	1,407.91	8.31	5.32	1.64	.66	7.62	8.99	.48	.14	.06	.68
June	93	18,100	1,610.90	81.00	28.26	10.00	114.26	1,496.64	8.27	5.03	1.44	.62	7.09	8.90	.45	.13	.05	.63
September	94	14,100	1,194.08	81.00	26.99	10.00	117.99	1,076.09	7.63	6.78	2.26	.84	9.88	8.47	.58	.19	.07	.84
Average	94	17,209	1,424.52	81.00	22.49	10.00	113.49	1,311.03	7.62	5.69	1.58	.70	7.97	8.28	.47	.13	.06	.66
1915-16.																	
October	98	19,430	1,337.91	81.00	27.94	10.00	118.94	1,218.97	6.27	6.05	2.09	.75	8.89	6.88	.42	.14	.05	.61
November	98	18,670	1,102.17	81.00	24.82	10.00	115.82	986.35	5.28	7.35	2.25	.91	10.51	5.90	.44	.13	.05	.62
December	109	20,600	1,244.10	81.00	28.10	10.00	119.10	1,125.00	5.46	6.51	2.26	.80	9.57	6.04	.39	.14	.05	.58
January	121	23,530	1,741.22	81.00	36.13	10.00	127.13	1,614.09	6.86	4.65	2.07	.57	7.29	7.40	.35	.15	.04	.54
February	107	19,700	1,584.45	81.00	27.73	10.00	118.73	1,465.72	7.44	5.11	1.75	.63	7.49	8.04	.41	.14	.05	.60
March	96	14,690	1,254.15	81.00	27.41	10.00	118.41	1,135.74	7.73	6.46	2.18	.80	9.44	8.54	.55	.19	.07	.81
April	106	19,340	1,740.60	81.00	28.73	10.00	119.73	1,620.87	8.38	4.65	1.65	.57	6.87	9.00	.42	.15	.05	.62
May	99	19,230	1,729.45	81.00	24.89	10.00	115.89	1,613.56	8.39	4.68	1.44	.58	6.70	8.99	.42	.13	.05	.60
June	100	19,160	1,517.16	81.00	29.48	10.00	120.48	1,396.68	7.29	5.34	1.94	.66	7.94	7.91	.42	.15	.05	.62
July	86	14,150	1,243.21	81.00	21.11	10.00	112.11	1,131.10	7.99	6.51	1.70	.80	9.01	8.78	.57	.15	.07	.79
August	103	22,390	2,078.27	81.00	30.67	10.00	121.67	1,956.60	8.78	3.90	1.48	.48	5.86	9.33	.36	.14	.05	.55
September	95	19,520	1,882.10	81.00	25.60	10.00	116.60	1,765.50	9.04	4.60	1.36	.53	6.19	9.64	.42	.13	.05	.60
Average	102	19,193	1,537.90	81.00	27.72	10.00	118.72	1,419.18	7.39	5.27	1.80	.65	7.72	8.01	.42	.15	.05	.62
1920-21.																	
January	98	20,720	2,379.57	125.15	44.95	12.50	182.60	2,196.97	10.60	5.26	1.89	.53	7.68	11.48	.60	.22	.06	.88
February	102	21,040	2,374.40	125.15	42.35	12.50	180.00	2,194.40	10.43	5.27	1.78	.53	7.58	11.29	.60	.20	.06	.86
April	111	18,500	1,144.10	125.15	39.15	12.50	176.80	967.30	5.23	10.94	3.42	1.09	15.45	6.18	.67	.21	.07	.95
May	96	18,100	1,730.22	125.15	45.84	12.50	183.49	1,546.73	8.55	7.23	2.65	.72	10.60	9.56	.69	.25	.07	1.01
June	100	19,200	1,767.30	125.15	36.90	12.50	174.55	1,592.75	8.30	7.08	2.09	.71	9.88	9.21	.65	.19	.07	.91
July	116	18,420	2,569.00	125.15	52.50	12.50	190.15	2,378.85	12.91	4.87	2.04	.49	7.40	13.95	.68	.29	.07	1.04
Average	104	19,330	1,994.10	125.15	43.61	12.50	181.26	1,812.84	9.38	6.28	2.19	.63	9.10	10.32	.65	.23	.06	.94

Digitized by Google

TABLE A87—*Live stock*—Continued.

SHEEP FROM MONTE VISTA, COLO., TO KANSAS CITY STOCKYARDS, MO.

Period.	Number of head per car.	Total weight of stock per car.	Gross proceeds per car.	Deductions from gross—				Net proceeds to shippers.		Ratio (per cent) to gross proceeds of—				Per 100 pounds.				
				Freight charges per car.	Feed and yardage charges per car.	Commission charges per car.	Total.	Per car.	Per 100 pounds.	Column 7.	Column 8.	Column 9.	Column 10.					
3	4	5	6	7	8	9	10	11 (6-10)	12 (11÷5)	13	14	15	16	6	7	8	9	10
1912-13.																		
December	276	20,910	$1,639.93	$92.00	$109.90	$14.00	$215.90	$1,424.03	$6.81	5.61	6.70	0.85	13.16	$7.84	$0.44	$0.52	$0.07	$1.03
January	254	22,660	1,200.16	92.00	62.18	14.00	168.18	1,031.98	4.56	7.66	5.18	1.17	14.01	5.30	.41	.27	.06	.74
February	308	23,660	1,926.57	92.00	87.02	14.00	193.02	1,733.55	7.32	4.77	4.52	.73	10.02	8.14	.39	.37	.06	.82
March	277	20,010	1,663.55	92.00	213.85	14.00	319.85	1,343.70	6.71	5.53	12.86	.84	19.23	8.31	.46	1.07	.07	1.60
April	261	19,720	1,639.40	92.00	33.48	14.00	139.48	1,499.92	7.60	5.61	2.04	.86	8.51	8.31	.47	.17	.07	.71
May	298	20,440	1,159.55	92.00	65.52	14.00	171.52	988.03	4.83	7.93	5.65	1.22	14.80	5.67	.45	.32	.07	.84
Average	279	21,233	1,538.20	92.00	95.33	14.00	201.33	1,336.87	6.29	5.98	6.20	.91	13.09	7.24	.43	.45	.07	.95
1915-16.																		
December	273	19,650	1,804.06	92.00	29.95	14.00	135.95	1,668.11	8.49	5.10	1.66	.78	7.54	9.18	.47	.15	.07	.69
January	258	23,260	1,515.39	92.00	80.64	14.00	186.64	1,328.75	5.71	6.07	5.32	.93	12.32	6.51	.39	.35	.06	.80
February	207	21,290	1,526.33	93.84	19.45	14.00	127.29	1,399.04	6.57	6.15	1.27	.92	8.34	7.17	.44	.09	.07	.60
March	262	21,250	1,924.71	92.00	49.36	14.00	155.36	1,769.35	8.33	4.78	2.56	.73	8.07	9.06	.43	.23	.07	.73
Average	250	21,362	1,692.62	92.46	44.85	14.00	151.31	1,541.31	7.21	5.46	2.65	.83	8.94	7.92	.43	.21	.07	.71
1920-21.																		
December	270	19,900	2,123.27	148.07	28.64	24.00	200.71	1,922.56	9.67	6.97	1.35	1.13	9.45	10.67	.74	.14	.12	1.00
January	275	20,160	2,086.56	148.07	162.36	24.00	334.43	1,752.13	8.69	7.10	7.78	1.14	16.02	10.35	.73	.81	.12	1.66
February	267	19,930	1,424.95	149.58	38.93	24.00	212.51	1,212.44	6.08	10.50	2.73	1.68	14.91	7.15	.75	.20	.12	1.07
March	274	18,490	1,728.95	148.08	62.16	24.00	234.24	1,494.71	8.08	8.56	3.59	1.39	13.54	9.35	.80	.34	.13	1.27
April	253	20,500	1,506.03	148.08	69.31	24.00	241.39	1,264.64	6.17	9.83	4.60	1.60	16.03	7.35	.72	.34	.12	1.18
Average	268	19,796	1,773.95	148.37	72.28	24.00	244.65	1,529.30	7.72	8.36	4.07	1.35	13.78	8.90	.75	.37	.12	1.24

Digitized by Google

1912-13.																		
October	116	10,480	$574.10	$17.98	$5.80	$10.00	$33.78	$540.32	$5.16	3.13	1.01	1.74	5.88	$5.48	$0.17	$0.06	$0.09	$0.32
November	139	9,670	517.32	17.98	6.90	10.00	31.88	482.44	4.99	3.48	1.33	1.94	6.75	5.35	.19	.07	.10	.36
December	234	23,560	927.00	25.52	11.70	14.00	51.22	875.78	3.71	2.75	1.26	1.52	5.53	3.03	.11	.05	.06	.22
January	234	23,700	1,365.67	25.20	11.70	14.00	50.90	1,314.77	5.55	1.85	.86	1.02	3.73	5.76	.10	.05	.06	.21
February	243	19,660	1,404.69	23.10	12.15	14.00	49.25	1,355.44	6.89	1.64	.86	1.01	3.51	7.14	.12	.06	.07	.25
March	234	20,697	1,371.39	25.20	11.72	17.81	54.73	1,316.66	6.36	1.84	.85	1.31	4.00	6.03	.12	.06	.09	.27
April	247	26,040	1,164.68	27.30	12.20	14.00	53.50	1,111.18	4.27	2.34	1.05	1.21	4.60	4.47	.10	.05	.05	.20
May	238	20,630	1,297.95	23.10	11.93	14.00	49.03	1,248.92	6.05	1.78	.92	1.08	3.78	6.29	.11	.06	.07	.24
June	267	24,660	1,142.85	29.10	34.66	14.00	77.76	1,065.09	4.32	2.55	3.03	1.22	6.80	4.63	.12	.14	.05	.31
July	273	20,920	1,351.62	23.10	13.65	14.00	50.75	1,300.87	6.22	1.71	1.01	1.04	3.76	6.46	.11	.06	.07	.24
August	152	9,800	634.98	18.60	7.60	10.00	36.20	598.78	6.05	2.93	1.20	1.57	5.70	6.42	.19	.08	.10	.37
September	123	11,040	425.79	18.60	6.15	10.00	34.75	391.04	3.55	4.37	1.44	2.35	8.16	3.86	.17	.05	.09	.31
Average	208	18,415	1,014.84	22.90	12.18	12.98	48.06	966.78	5.25	2.26	1.20	1.28	4.74	5.51	.12	.07	.07	.26
1915-16.																		
October	90	8,710	471.49	15.40	4.60	10.00	30.00	441.49	5.07	3.27	.97	2.12	6.36	5.41	.18	.05	.11	.34
November	130	8,150	469.21	18.08	6.50	10.00	34.58	434.63	5.34	3.86	1.39	2.12	7.37	5.76	.22	.08	.12	.42
December	250	19,800	1,610.65	28.20	1.50	14.00	38.70	1,571.95	7.93	1.44	.09	.87	2.40	8.13	.12	.01	.07	.20
January	142	9,490	806.65	15.50	6.10	10.00	31.60	775.05	8.17	1.92	.76	1.23	3.91	8.50	.16	.06	.11	.33
February	234	16,650	1,544.57	30.85	11.70	17.00	59.55	1,485.02	8.92	2.00	.76	1.10	3.86	9.28	.19	.07	.10	.36
March	135	12,050	684.28	18.00	6.75	10.00	34.75	649.53	5.39	2.63	.99	1.46	5.08	5.68	.15	.06	.08	.29
April	122	9,750	628.72	18.00	6.10	10.00	34.10	594.62	6.10	2.86	.97	1.59	5.42	6.45	.19	.06	.10	.35
May	230	21,040	1,783.70	23.10	19.10	14.00	56.20	1,727.50	8.21	1.30	1.07	.78	3.15	8.48	.11	.09	.07	.27
June	216	12,120	1,201.49	23.10	13.70	14.00	50.80	1,150.69	9.49	1.92	1.14	1.17	4.23	9.91	.19	.11	.12	.42
July	303	22,020	1,724.29	23.20	15.20	14.00	52.40	1,671.89	7.59	1.35	.88	.81	3.04	7.83	.11	.07	.06	.24
August	146	11,030	862.57	19.90	7.30	10.00	37.20	825.37	7.48	2.31	.85	1.16	4.32	7.82	.18	.07	.09	.34
September	117	10,850	750.65	18.08	9.85	10.00	37.93	712.72	6.57	2.41	1.31	1.33	5.05	6.92	.17	.09	.09	.35
Average	178	13,472	1,044.86	20.53	9.03	11.92	41.48	1,003.38	7.45	1.96	.86	1.14	3.96	7.76	.15	.07	.09	.31
1920-21.																		
October	293	20,100	1,835.95	39.72	23.44	24.00	87.16	1,748.79	8.70	2.16	1.28	1.31	4.75	9.13	.20	.11	.12	.43
November	286	18,400	1,925.55	39.82	22.88	24.00	86.70	1,838.85	9.99	2.07	1.19	1.25	4.51	10.46	.22	.12	.13	.47
December	135	12,230	691.10	33.38	19.04	15.00	67.42	623.68	5.10	4.83	2.76	2.17	9.76	5.65	.27	.16	.12	.55
January	144	10,740	946.35	32.80	11.20	15.00	59.00	887.35	8.26	3.47	1.18	1.58	6.23	8.81	.31	.10	.14	.55
February	121	8,140	614.50	31.73	15.28	15.00	62.01	552.49	6.79	5.16	2.49	2.44	10.09	7.55	.39	.19	.18	.76
March	108	10,380	768.20	32.82	8.72	15.00	56.54	711.66	6.86	4.27	1.14	1.95	7.36	7.40	.32	.08	.14	.54
April	241	13,630	1,247.57	39.71	19.44	18.00	77.15	1,170.42	8.59	3.18	1.56	1.44	6.18	9.15	.29	.14	.13	.56
May	293	21,800	1,536.17	39.74	23.44	24.00	87.18	1,448.99	6.65	2.59	1.53	1.56	5.68	7.05	.18	.11	.11	.40
June	215	13,160	1,181.77	39.73	17.20	18.00	74.93	1,106.84	8.41	3.36	1.46	1.52	6.34	8.98	.30	.13	.14	.57
July	231	14,450	1,246.46	39.73	19.12	18.00	76.85	1,169.61	8.10	3.19	1.53	1.44	6.16	8.63	.28	.13	.12	.53
August	217	14,170	1,035.09	39.72	17.36	18.00	75.08	960.01	6.77	3.84	1.68	1.74	7.26	7.30	.28	.12	.13	.53
September	308	20,380	1,323.65	39.73	24.48	18.00	82.21	1,241.44	6.09	3.00	1.84	1.36	6.20	6.49	.19	.12	.09	.40
Average	216	14,798	1,196.03	37.38	18.47	18.50	74.35	1,121.68	7.58	3.13	1.54	1.55	6.22	8.08	.25	.12	.13	.50

Digitized by Google

TABLE A88.—*Average gross and net proceeds to shipper and average transportation and other charges in transit from typical producing point to typical markets.*

LIVE STOCK.

Point of destination (market).	Point of origin.	Period.	Number of head.	Total weight of stock.	Gross proceeds.	Deductions from gross—				Net proceeds to shippers.		Per cent to gross receipts.			
						Freight charges.	Feed and yardage charges.	Commission charges.	Total.	Per shipment.	Per pound.	Column 7.	Column 8.	Column 9.	Column 11.
1	2	3	4	5	6	7	8	9	10	11 (6−10)	12 (11÷5)	13	14	15	16
Kansas City, Mo.: Cattle—				*Pounds.*							*Cents.*				
Canners and cutters.	Rogers, Ark.	1913	110	64,110	$2,869	$116	$38	$42	.....	$2,673	4.17	4.04	1.33	1.46	93.17
		1916	154	98,280	5,668	118	62	60	.....	5,428	5.52	3.14	1.09	1.06	94.71
		1921	160	76,310	3,612	294	92	86	.....	3,140	4.11	8.14	2.55	2.38	86.93
Beef.	Various points in Texas, Oklahoma, New Mexico, Colorado, Nevada, Iowa, Kansas, and Missouri.	1913	133	117,319	8,245	189	53	70	.....	7,933	6.76	2.30	.60	.90	96.20
		1916	142	123,804	9,001	225	63	76	.....	8,637	6.98	2.50	.70	.80	96.00
		1921	192	148,871	9,580	507	115	133	.....	8,825	5.93	5.30	1.20	1.40	92.10
Hogs.	Various points in Texas, Arkansas, Missouri, Kansas, Nebraska, and Iowa.	1913	524	102,996	8,169	177	57	63	.....	7,872	7.60	2.20	.70	.80	96.30
		1916	293	50,080	4,339	89	34	33	.....	4,183	8.40	2.00	.80	.80	96.40
		1921	376	68,505	6,895	242	90	68	.....	6,495	9.50	3.50	1.30	1.00	94.20
Sheep.	Various points in Texas, Missouri, Iowa, Colorado, and Utah.	1913	1,043	86,722	5,167	250	165	60	.....	4,692	8.41	4.80	3.20	1.20	90.80
		1916	889	69,972	5,471	240	89	55	.....	5,087	7.27	4.40	1.60	1.00	93.00
		1921	1,152	83,619	6,773	492	206	108	.....	5,967	7.14	7.30	3.00	1.60	88.10
Sioux City, Iowa:															
Cattle.	6 points in South Dakota and North Dakota.	1913	108	90,139	5,770	126	42	53	.....	5,549	6.16	2.20	.70	.90	96.20
		1916	185	151,379	9,304	208	77	90	.....	8,929	5.90	2.20	.80	1.00	96.00
		1921	195	134,804	7,674	323	105	153	.....	7,093	5.26	4.20	1.40	2.00	92.40
Beef steers.	4 points in South Dakota, North Dakota, and Minnesota.	1913	67	64,213	4,091	114	24	31	.....	3,922	6.10	2.80	.60	.80	95.80
		1916	109	95,043	6,948	103	43	56	.....	6,686	6.82	2.30	.60	.90	96.20
		1921	73	73,485	5,171	220	86	65	.....	4,850	6.60	4.20	.70	1.30	93.80
Hogs.	6 points in South Dakota and Minnesota.	1913	309	77,860	6,118	133	40	41	.....	5,904	7.58	2.20	.60	.70	96.50
		1916	614	133,420	10,828	221	97	71	.....	10,439	7.82	2.00	.90	.70	96.40
		1921	440	107,730	9,417	312	95	109	.....	8,901	8.26	3.30	1.00	1.20	98.50
Oklahoma City:															
Beef steers.	2 points in Oklahoma and Texas.	1913	296	284,648	18,452	333	93	136	.....	17,890	6.28	1.80	.50	.70	97.00
		1916	298	291,772	17,724	331	105	102	.....	17,126	6.30	1.90	.60	.90	96.60
		1921	345	302,180	18,576	734	178	250	.....	17,414	5.76	3.90	1.00	1.40	93.70
Hogs.	do.	1913	770	187,433	14,752	259	121	86	.....	14,286	7.62	1.80	.80	.60	96.80
		1916	984	210,742	16,585	309	148	120	.....	16,008	7.60	1.90	.90	.70	96.50
		1921	872	209,865	16,820	557	202	169	.....	15,892	8.89	3.30	1.20	1.00	94.50

Digitized by Google

Fort Worth Tex.: Cattle—															
Feeders and stockers.	2 points in Texas	1913	171	107,490	4,681	194	45	60	.....	4,382	4.08	4.10	1.00	1.30	93.60
		1916	295	243,740	10,279	323	90	102	.....	10,764	4.42	2.90	.80	.90	95.40
		1921	214	132,188	6,535	430	109	99	.....	5,897	4.45	6.60	1.70	1.50	90.20
Beef steers..	Various points in Texas	1913	275	256,840	15,908	341	79	128	.....	15,300	5.98	2.14	.50	.80	96.56
		1916	277	260,330	18,909	411	83	129	.....	18,286	6.79	2.17	.44	.68	96.71
		1921	297	265,410	15,640	782	154	186	.....	14,518	5.66	5.00	.98	1.19	92.83
Hogs.....	Various points in Oklahoma and Texas.	1913	936	193,005	16,179	482	146	88	.....	15,463	8.01	3.00	.90	.50	95.60
		1916	605	114,090	10,143	241	101	56	.....	9,745	8.54	2.40	1.00	.50	96.10
		1921	593	120,170	11,141	399	162	84	.....	10,296	8.57	5.40	1.50	.70	92.40
Chicago, Ill.:															
Cattle.....	30 points in Minnesota, Iowa, and Illinois.	1913	24	22,941	1,683	40	13	12	.....	1,618	7.05	2.40	.80	.70	96.10
		1916	33	32,584	2,509	63	15	17	.....	2,414	7.41	2.50	.60	.70	96.20
		1921	49	44,382	3,167	158	34	42	.....	2,933	6.61	5.00	1.10	1.30	92.60
Hogs.....	32 points in Illinois, Missouri, Iowa, South Dakota, Minnesota, and Wisconsin.	1913	86	19,257	1,555	40	12	8	.....	1,495	7.76	2.60	.80	.50	96.10
		1916	88	19,836	1,911	42	15	8	.....	1,846	9.31	2.20	.80	.40	96.60
		1921	79	19,786	1,773	76	23	16	.....	1,658	8.38	4.30	1.30	.90	93.50
Sheep.....	5 points in Colorado, Idaho, Oregon, Illinois, and Iowa.	1913	2,195	157,538	11,136	1,554	492	108	.....	8,982	5.70	14.00	4.40	1.00	80.60
		1916	1,676	130,920	13,512	1,179	312	87	.....	11,934	9.12	8.70	2.30	.70	88.30
		1921	1,892	153,480	12,325	2,460	452	171	.....	9,242	6.02	20.00	3.60	1.40	75.00
St. Joseph, Mo.:															
Cattle.....	Various points in Missouri..	1913	266	266,138	19,663	179	85	152	.....	19,247	7.23	.92	.43	.77	97.88
		1916	261	289,468	24,926	181	92	157	.....	24,496	8.46	.73	.37	.63	98.27
		1921	271	275,948	21,494	378	149	219	.....	20,750	7.52	1.75	.69	1.02	96.54
Hogs.....		1913	915	190,185	15,763	181	116	113	.....	15,353	8.07	1.14	.74	.72	97.40
		1916	809	184,780	16,032	163	126	120	.....	15,623	8.45	1.02	.78	.75	97.45
		1921	951	206,970	20,072	302	231	170	.....	19,369	9.36	1.50	1.15	.85	96.50
Denver, Colo.:															
Cattle.....	Rifle, Colo	1913	126	118,350	7,685	334	64	62	.....	7,225	6.10	4.35	.87	.81	94.01
		1916	30	26,920	1,817	67	20	15	.....	1,715	6.37	3.69	1.10	.83	94.38
		1921	25	22,065	1,466	98	24	19	.....	1,325	6.00	6.68	1.64	1.30	90.38
Hogs.....	Haxtum, Colo	1913	325	89,200	7,295	192	58	51	.....	6,994	7.84	2.63	.80	.70	95.87
		1916	709	155,930	13,092	309	120	98	.....	12,565	8.06	2.36	.92	.75	95.97
		1921	421	98,000	9,529	338	98	89	.....	9,004	9.18	3.54	1.03	.93	94.50
National Stock Yards, Illinois: Cattle—															
Canners and cutters.	Monticello, Ark	1913	109	45,005	1,680	136	27	30	.....	1,487	3.30	8.09	1.61	1.79	88.51
		1916	206	87,210	3,757	290	64	68	.....	3,335	3.82	7.72	1.70	1.81	88.77
		1921	59	47,560	2,947	210	32	44	.....	2,661	5.60	7.13	1.09	1.49	90.29
Beef.....	3 points in Oklahoma, Texas, and Missouri.	1913	120	101,864	6,576	274	43	62	.....	6,197	6.08	4.20	.70	.90	94.20
		1916	90	74,738	4,877	287	38	52	.....	4,500	6.02	5.90	.80	1.00	92.30
		1921	113	76,535	4,573	415	71	73	.....	4,014	5.25	9.10	1.50	1.60	87.80
Hogs.....	2 points in Kentucky and Iowa.	1913	412	70,135	5,605	142	66	45	.....	5,352	7.63	2.50	1.20	.80	95.50
		1916	262	46,505	4,309	92	51	33	.....	4,133	8.89	2.10	1.20	.80	95.90
		1921	639	117,000	11,171	407	139	117	.....	10,508	8.98	3.60	1.20	1.10	94.10
Sheep.....	Marshfield, Mo	1913	329	31,110	1,336	84	17	30	.....	1,205	3.87	6.29	1.27	2.25	90.19
		1916	311	17,480	2,256	48	13	26	.....	2,169	7.90	2.13	.58	1.15	96.14
		1921	312	20,130	1,780	93	25	32	.....	1,630	8.10	5.22	1.40	1.80	91.58

Digitized by Google

TABLE A88.—*Average gross and net proceeds to shipper and average transportation and other charges in transit from typical producing point to typical markets*—Continued.

LIVE STOCK—Continued.

Point of destination (market).	Point of origin.	Period.	Number of head.	Total weight of stock.	Gross proceeds.	Deductions from gross—				Net proceeds to shippers.		Per cent to gross receipts.			
						Freight charges.	Feed and yardage charges.	Commission charges.	Total.	Per shipment.	Per pound.	Column 7.	Column 8.	Column 9.	Column 11.
1	2	3	4	5	6	7	8	9	10	11 (6—10)	12 (11÷5)	13	14	15	16
South Omaha, Nebr.:				*Pounds.*							*Cents.*				
Beef steers	2 points in Colorado and Nebraska.	1913	55	60,150	$4,634	$90	$17	$29	.....	$4,498	7.48	1.90	.40	.60	97.10
		1916	46	46,950	3,726	76	21	27	.....	3,602	7.67	2.00	.60	.70	96.70
		1921	94	107,800	8,029	304	48	87	.....	7,590	7.04	3.80	.60	1.10	94.50
Hogs	Geneva, Nebr.	1913	535	144,900	11,374	226	84	72	.....	10,992	7.59	1.99	.74	.63	96.64
		1916	270	70,000	5,763	109	45	40	.....	5,569	7.96	1.89	.78	.69	96.64
		1921	373	103,700	9,008	268	94	88	.....	8,558	8.25	2.98	1.04	.98	95.00
Sheep	2 points in Nebraska and Idaho.	1913	738	67,000	4,296	188	62	37	.....	4,009	5.98	4.40	1.40	.90	93.30
		1916	697	67,250	5,721	196	48	45	.....	5,432	8.08	3.40	.80	.80	95.00
		1921	736	64,610	5,958	298	95	61	.....	5,504	8.52	5.00	1.60	1.00	92.40
Portland, Oreg.:															
Beef steers	4 points in Washington, Montana, Idaho, and Oregon.	1913	140	162,464	12,409	485	105	55	.....	11,764	7.24	3.90	.90	.40	94.80
		1916	121	154,976	8,872	388	103	68	.....	8,313	5.36	4.40	1.10	.80	93.70
		1921	129	196,122	13,912	907	175	132	.....	12,698	6.47	6.50	1.30	.90	91.30
Hogs	Baker, Oreg.	1913	656	120,460	9,971	567	157	70	.....	9,177	7.62	5.69	1.57	.70	92.04
		1916	1,216	230,310	18,455	972	333	120	.....	17,030	7.39	5.27	1.80	.65	92.28
		1921	623	115,980	11,965	751	262	75	.....	10,877	9.38	6.28	2.19	.63	90.90
Sheep	3 points in Washington, Idaho, and Oregon.	1913	694	64,077	3,291	211	63	27	.....	2,990	4.67	6.40	1.90	.80	90.90
		1916	418	37,432	2,341	137	46	25	.....	2,143	5.70	5.80	2.00	1.10	91.10
		1921	734	70,505	4,041	365	95	56	.....	3,525	5.00	9.00	2.40	6.40	87.20

Digitized by Google

Source.		All-rail shipments.								Shipped to tidewater.		Shipped to Great Lakes for cargo.		Total quantity (net tons).
		Used within the State.		Shipped to other States.		Used by railroads.		Exported by rail.						
State.	Field.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	
Alabama	Alabama	11,627,695	60.6	1,563,467	8.2	5,207,184	27.1			786,616	4.1			19,184,962
Arkansas	Arkansas	621,916	27.9	832,537	37.4	772,916	34.7							2,227,369
California, Idaho	California and Idaho	6,400	100.0											6,400
Colorado	Colorado	6,345,806	51.1	2,790,553	22.5	3,246,855	26.2	24,357	0.2					12,407,571
Georgia	Georgia	(1)		(1)		(1)				(1)		(1)		(1)
Illinois	Illinois	37,427,705	41.9	19,382,513	21.7	32,370,362	36.3	95,125	.1	15,400				89,291,105
Indiana	Indiana	13,003,787	42.4	8,665,310	28.3	8,904,451	29.0	105,086	.3					30,678,634
Iowa	Iowa	3,819,427	46.6	475,145	5.8	3,897,623	47.6							8,192,195
Kansas	Kansas	2,341,854	31.0	1,976,661	26.1	3,243,432	42.9							7,561,947
Kentucky	Hazard	292,085	12.4	1,485,023	62.8	314,940	13.2	1,386				270,902	11.6	2,364,336
Do	Northeastern Kentucky.	1,140,472	16.0	4,452,324	62.6	535,976	8.3	125,235	1.8			804,809	11.3	7,108,816
Do	Southeastern Kentucky.	1,411,185	17.5	4,830,962	59.8	1,588,246	19.6	205		13,223	.2	238,843	2.9	8,082,664
Do	Western Kentucky	2,809,728	25.9	3,836,231	35.4	4,176,775	38.6			10,500	.1			10,833,234
Do	Kanawha and Kenova-Thacker.	618,127	2.0	(2)		(2)		(2)		(2)		(2)		618,127
Maryland	Cumberland - Piedmont and Somerset.	1,487,952	10.5	(3)		(3)		(3)		(3)				1,487,952
Michigan	Michigan	1,190,497	81.3			274,321	18.7							1,464,818
Missouri	Missouri	2,881,900	50.8	728,099	12.8	2,057,731	36.4							5,667,730
Montana	Montana and northern Wyoming.	1,695,717	22.3	[4] 1,388,788	18.3	[4] 4,183,182	55.0	[4] 47						7,267,734
New Mexico	New Mexico	1,403,715	34.9	679,461	16.9	1,735,832	43.2	74,231	1.8	130,000	3.2			4,023,239
North Carolina	North Carolina	1,420	100.0											1,420
North Dakota	North Dakota	691,637	96.1	14,490	2.0	13,606	1.9							719,733
Ohio	Southern Ohio	5,531,946	35.1	[5] 2,848,899	18.1	[5] 3,826,636	24.3	[5] 221,388	1.4			[5] 3,216,221	20.3	15,645,090
Do	Northern Ohio	12,198,428	40.3	2,657,295	8.8	6,939,032	22.9	2,155,893	7.1	15,523	.1	6,320,513	20.8	30,286,684

[1] Tennessee includes Georgia.
[2] Kanawha and Kenova-Thacker, W. Va., includes Kentucky.
[3] Cumberland-Piedmont, Somerset, and Meyersdale, Pa., includes Maryland and and Virginia.
[4] Montana and northern Wyoming includes Wyoming.
[5] Southern Ohio includes West Virginia.

Digitized by Google

TABLE A124.—*Distribution of bituminous coal produced in the United States in 1918, by routes and destinations*—Continued.

Source.		All-rail shipments.								Shipped to tide-water.		Shipped to Great Lakes for cargo.		Total quantity (net tons).
		Used within the State.		Shipped to other States.		Used by railroads.		Exported by rail.						
State.	Field.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	Quantity (net tons).	Per cent of production.	
Oklahoma	Oklahoma	1,681,134	34.9	889,324	18.5	2,242,989	46.6							4,813,447
Oregon	Oregon	13,328	100.0											13,328
Pennsylvania	Central Pennsylvania	12,282,131	19.9	[6] 15,233,134	24.8	18,190,635	29.5	4,344,524	7.0	11,566,283	18.8	12,002		61,628,709
Do	Northern Pennsylvania	2,551,062	31.7	2,555,657	31.7	2,087,382	25.9	711,745	8.9			145,537	1.8	8,051,383
Pennsylvania	Westmoreland, Greensburg, Latrobe, and Ligonier.	7,230,274	40.8	2,001,875	11.3	6,142,348	34.7	219,876	1.2	1,653,425	9.4	453,672	2.6	17,701,470
Do	Connellsville	28,277,368	79.3	4,149,005	11.6	2,043,219	5.7	231,300	.7	517,248	1.4	458,360	1.3	35,676,500
Do	Cumberland-Piedmont and Somerset.	3,128,298	21.9	[1] 2,512,764	17.6	[1] 759,010	5.3	[1] 228		[1] 6,166,553	43.2			12,566,853
Do	Pittsburgh and Panhandle.	21,334,122	41.4	[2] 13,163,098	25.5	[2] 5,587,177	10.9	[2] 2,298,676	4.5	[2] 277,534	.5	[2] 7,080,162	13.7	49,740,769
South Dakota	South Dakota	7,942	100.0											7,942
Tennessee [3]	Tennessee [3]	2,319,370	33.6	1,367,950	19.8	3,209,223	46.6			1,124		97		6,897,764
Texas	Texas	1,222,699	54.1	6,761	.3	941,874	41.6	69,801	3.1	20,000	.9			2,261,135
Utah	Utah and Southern Wyoming.	2,684,262	23.3	[4] 2,776,816	24.2	[4] 5,553,320	48.3			[1] 69,884	.6			11,084,282
Virginia	Southwest Virginia	2,963,885	32.8	2,639,199	29.2	2,872,154	31.8	996		564,558	6.2			9,040,792
Do	Pocahontas and Tug River.	2,071,687	8.9	(5)		(5)		(5)		(5)		(5)		2,071,687
Washington	Washington	1,510,782	37.0	186,026	4.6	1,871,084	45.8	20,000	.5	494,320	12.1			4,082,212
West Virginia	Fairmont	2,727,356	13.6	5,798,315	28.8	6,364,777	31.6	155,075	.8	3,741,539	18.6	1,317,284	6.6	20,104,346
Do	New River	1,122,050	7.8	2,695,688	18.7	980,791	6.7	1,278		9,286,536	64.3	361,450	2.5	14,447,793
Do	Pocahontas and Tug River.	3,256,169	14.1	[5] 6,581,753	28.5	[5] 1,541,063	6.7	[5] 172,443	.7	[5] 7,854,855	34.0	[5] 1,650,265	7.1	21,056,548
Do	Kanawha and Kenova-Thacker.	1,494,074	4.9	[6] 15,361,549	50.1	[6] 5,681,786	18.5	[6] 310,297	1.0	[6] 1,362,963	4.5	[6] 5,826,384	19.0	30,037,053
Do	Cumberland-Piedmont and Somerset.	212,420	1.5	(1)		(1)		(1)		(1)				212,420
Do	Pittsburgh and Panhandle.	1,813,573	3.5	(2)		(2)		(2)		(2)				1,813,573
Do	Southern Ohio	122,446	.8											122,446

Digitized by Google

Do	Wyoming. Utah and Wyoming.	417,608	3.6	(4)		(4)				(4)				417,608
Alaska	Alaska	75,606	100.0											75,606
		209,407,439	36.1	136,[illegible],672	23.6	149,407,982	25.8	11,339,192	1.9	44,948,084	7.7	28,186,501	4.9	579,385,820

[1] Tennessee includes Georgia.
[2] Kanawha and Kenova-Thacker, W. Va., includes Kentucky.
[3] Cumberland-Piedmont, Somerset, and Meyersdale, Pa., includes Maryland and West Virginia.
[4] Montana and northern Wyoming includes Wyoming.
[5] Southern Ohio includes West Virginia.
[6] Includes 229,351 tons of railroad fuel via Lake Ontario.

Digitized by Google

TABLE A127.—*Statement showing the average mine, wholesale, and retail prices of coal and the average transportation cost from typical producing districts to typical markets, per net ton.*

Point of destination (market).	Point of origin.	Period.	Average mine price f.o.b.cars.	Transportation charges to destination.				Average mine price f. o. b. cars plus transportation charges to destination.	Average wholesale price at destination.	Average retail price at destination.	Spread between average mine price f. o. b. cars plus transportation charges to destination and—	
				Rail rate.	Loading charges.	Water rate.	Total charges.				Average wholesale price at destination.	Average retail price at destination.
1	2	3	4	5	6	7	8	9=(4+8)	10	11	12=(10 −9)	13=(11 −9)
Baltimore, Md.:												
Anthracite—												
Pennsylvania stove...	Schuylkill and Lehigh district...	1912–13	$3.482	$1.786	.....	.....	$1.786	$5.268	$5.267	$6.937	.....	$1.669
		1915–16	3.706	1.786	.....	.....	1.786	5.492	5.491	7.210	.....	1.718
		1920–21	7.558	3.250	.....	.....	3.250	10.808	10.906	13.504	.....	2.746
Pennsylvania chestnut	.....do.....	1912–13	3.316	1.786	.....	.....	1.786	5.402	5.402	7.165	.....	1.763
		1915–16	3.817	1.786	.....	.....	1.786	5.603	5.600	7.388	.....	1.785
		1920–21	7.585	3.250	.....	.....	3.250	10.835	10.933	13.504	.....	2.669
Bituminous, mine run....	Meyersdale district.....	1912–13	1.094	1.428	.....	.....	1.428	2.522	2.522	3.393	.....	.871
		1915–16	1.273	1.428	.....	.....	1.428	2.701	2.701	3.795	.....	1.094
		1920–21	3.748	2.839	.....	.....	2.839	6.587	6.587	8.259	.....	1.672
Birmingham, Ala., bituminous, lump.	Mary Lee seam.....	1912–13	1.625	.300	.....	.....	.300	1.925	1.925	3.500	.....	1.575
		1915–16	1.575	.300	.....	.....	.300	1.875	1.875	3.250	.....	1.375
		1920–21	3.250	.875	.....	.....	.875	4.125	4.125	6.000	.....	1.875
Bridgeport, Conn., anthracite:												
Stove.....	Lehigh and Wilkes-Barre district (via L. V. & C. N. E. R. R.).	1912–13	2.840	2.060	.....	.....	2.060	4.900	4.900	6.600	.....	1.700
		1915–16	3.100	2.060	.....	.....	2.060	5.160	5.160	7,250	.....	2.090
		1920–21	7.630	3.620	.....	.....	3.620	11.250	11.250	15.180	.....	3.930
Chestnut.....	Lehigh and Wilkes-Barre district.	1912–13	2.900	2.060	.....	.....	2.060	4.960	4.960	6.750	.....	1.790
		1915–16	3.150	2.060	.....	.....	2.060	5.210	5.210	7.250	.....	2.040
		1920–21	7.320	3.620	.....	.....	3.620	10.940	10.940	15.180	.....	4.240
Stove.....	Wilkes-Barre district (via Pennsylvania R. R.).	1912–13	2.840	2.280	.....	.....	2.280	5.120	5.120	6.600	.....	1.480
		1915–16	3.100	2.280	.....	.....	2.280	5.380	5.380	7.250	.....	1.870
		1920–21	7.630	3.620	.....	.....	3.620	11.250	11.250	15.180	.....	3.930
Chestnut.....	.....do.....	1912–13	2.900	2.280	.....	.....	2.280	5.180	5.180	6.750	.....	1.570
		1915–16	3.150	2.280	.....	.....	2.280	5.430	5.430	7.250	.....	1.820
		1920–21	7.320	3.620	.....	.....	3.620	10.940	10.940	15.180	.....	4.240

Digitized by Google

Prepared sizes	Bear Creek, Utah	1912-13	2.500	2.000			2.000	4.500	6.830	6.830	2.330	2.330
		1915-16	2.775	1.850			1.850	4.625	6.943	6.943	2.318	2.318
		1920-21	5.550	2.400			2.400	7.950	12.125	12.125	4.175	4.175
Do	Kirby, Wyo	1912-13	2.500	3.000			3.000	5.500	7.840	7.840	2.340	2.340
		1915-16	2.563	2.300			2.300	4.863	7.395	7.395	2.533	2.533
		1920-21	5.838	3.625			3.625	9.463	12.980	12.980	3.518	3.518
Little Rock, Ark.:												
Anthracite—												
Arkansas stove	Spadra, Ark	1912-13	4.00	1.20			1.20	5.20	5.20	6.63		1.43
		1915-16	4.10	1.10			1.10	5.20	5.20	6.50		1.30
		1920-21	9.25	2.16			2.16	11.41	11.41	14.75		3.34
Arkansas egg	do	1912-13	4.13	1.00			1.00	5.13	5.13	6.75		1.62
		1915-16	4.25	.90			.90	5.15	5.15	6.75		1.60
		1920-21	9.88	1.89			1.89	11.77	11.77	15.75		3.98
Bituminous—												
Mine run	Earlington, Ky	1912-13	1.30	2.25			2.25	3.55	3.55	4.63		1.08
		1915-16	1.40	2.35			2.35	3.75	3.75	4.75		1.00
		1920-21	2.88	3.87			3.87	6.75	6.79	11.00	.04	4.25
Lump	Johnson City, Ill	1912-13	2.00	2.25			2.25	4.25	4.25	5.75		1.50
		1915-16	2.13	2.35			2.35	4.48	4.48	5.88		1.40
		1920-21	4.25	2.92			2.92	7.17	8.17	13.50	1.00	6.34
Los Angeles, Calif.:												
Anthracite—												
Stove	Crested Butte, Colo	1912-13	5.00	8.00			8.00	13.00	13.00	16.00		3.00
		1915-16	6.50	7.25			7.25	13.75	13.75	24.00		10.25
		1920-21	9.00	9.88			9.88	18.88	18.88	28.00		9.13
Do	Cerrillos, N. Mex	1912-13	6.50	5.50			5.50	12.00	12.00	16.00		4.00
		1915-16	14.00	6.50			6.50	20.50	20.50	24.00		3.50
		1920-21	11.75	9.00			9.00	20.75	20.75	28.00		7.25
Bituminous lump	Gallup, N. Mex	1912-13	2.75	5.15			5.15	7.90	7.90	12.50		4.60
		1915-16	2.45	5.65			5.65	8.10	8.10	12.88		4.78
		1920-21	6.63	7.25			7.25	13.88	14.00	18.50	1.25	4.63
Manchester, N. H., anthracite:												
Stove	Delaware & Hudson	1912-13	3.52	3.00			3.00	6.51	8.63	8.88	2.13	2.37
		1915-16	3.59	2.95			2.95	6.54	9.00	9.25	2.46	2.71
		1920-21	7.66	5.00			5.00	12.66	17.00	17.25	4.35	4.59
Do	Lehigh Valley and Philadelphia & Reading.	1912-13	3.74	3.17			3.17	6.91	8.63	8.88	1.72	1.97
		1915-16	3.61	3.17			3.17	6.78	9.00	9.25	2.23	2.47
		1920-21	7.46	5.38			5.38	12.83	17.00	17.25	4.17	4.42
Chestnut	Delaware & Hudson	1912-13	3.58	3.00			3.00	6.58	8.63	8.88	2.05	2.29
		1915-16	4.10	2.95			2.95	7.05	9.00	9.25	1.95	2.20
		1920-21	8.73	5.00			5.00	13.73	17.00	17.25	3.28	3.53
Do	Lehigh Valley and Philadelphia & Reading.	1912-13	3.99	3.17			3.17	7.16	8.63	8.88	1.47	1.72
		1915-16	4.13	3.17			3.17	7.30	9.00	9.25	1.70	1.95
		1920-21	8.34	5.38			5.38	13.72	17.00	17.25	3.29	3.54
New Orleans, La., bituminous:												
Mine run	Alabama	1912-13	1.00	1.25			1.25	2.25	2.35	2.75	.10	.50
		1915-16	1.05	1.40			1.40	2.45	2.40	2.80	.05	.35
		1920-21	3.63	2.50			2.50	6.13	6.63	7.50	.50	1.38

Digitized by Google

TABLE A127.—*Statement showing the average mine, wholesale, and retail prices of coal and the average transportation cost from typical producing districts to typical markets, per net ton*—Continued.

Point of destination (market).	Point of origin.	Period.	Average mine price f.o.b. cars.	Transportation charges to destination.				Average mine price f. o. b. cars plus transportation charges to destination.	Average wholesale price at destination.	Average retail price at destination.	Spread between average mine price f. o. b. cars plus transportation charges to destination and—	
				Rail rate.	Loading charges.	Water rate.	Total charges.				Average wholesale price at destination.	Average retail price at destination.
1	2	3	4	5	6	7	8	(9=4+8)	10	11	12=10−9	13=(11−9)
New Orleans, La., bituminous—Continued.												
Mine run	West Kentucky	1912-13	$0.75	$1.50			$1.50	$2.25	$2.30	$2.75	$0.05	$0.50
		1915-16	.80	1.65			1.65	2.45	2.35	2.80	.10	.35
		1920-21	5.88	2.82			2.82	8.70	6.50	7.38	.31	1.18
Prepared sizes (first class)	Alabama	1912-13	3.00	1.25			1.25	4.25	4.75	6.65	.50	2.40
		1915-16	3.00	1.40			1.40	4.40	4.75	6.65	.35	2.25
		1920-21	7.25	2.50			2.50	9.75	10.75	13.25	1.00	3.50
Do	West Kentucky	1912-13	2.60	1.50			1.50	3.50	4.00	6.10	.50	2.60
		1915-16	2.60	1.65			1.65	3.65	4.00	6.10	.35	2.40
		1920-21	5.13	2.82			2.82	7.95	8.88	11.38	.93	3.43
Newark, N. J., anthracite:												
Pennsylvania stove	Lehigh and Wyoming region	1912-13	3.17	1.43			1.43	4.60	4.60	6.63	.....	2.63
		1915-16	3.51	1.36			1.36	4.87	4.87	6.63	.....	1.76
		1920-21	6.96	2.38			2.38	9.34	9.41	12.85	.07	3.51
Pennsylvania chestnut	do	1912-13	3.39	1.43			1.43	4.82	4.82	6.63	.....	1.81
		1915-16	3.64	1.36			1.36	5.00	5.00	6.87	.....	1.87
		1920-21	6.96	2.38			2.38	9.34	9.41	12.85	.07	3.51
New York, N. Y., anthracite:												
Stove	Lehigh and Wilkes-Barre	1912-13	3.169	1.43			1.43	4.60	4.60	6.65	.....	2.05
		1915-16	3.480	1.36			1.36	4.87	4.87	7.13	.....	2.26
		1920-21	6.964	2.38			2.38	9.34	9.34	13.53	.....	4.19
Chestnut	do	1912-13	3.390	1.43			1.43	4.82	4.82	6.90	.....	2.08
		1915-16	3.638	1.36			1.36	5.00	5.00	7.28	.....	2.28
		1920-21	6.964	2.38			2.38	9.34	9.34	13.53	.....	4.19

Digitized by Google

Philadelphia, Pa., anthracite:												
Stove	Anthracite region (Philadelphia & Reading R. R.)	1912-13	3.42	1.52			1.52	4.94	4.94	6.14		1.20
		1915-16	3.80	1.52			1.52	5.32	5.32	6.67		1.35
		1920-21	7.97	2.38			2.38	10.35	10.35	12.06		2.71
Chestnut	do											
Salt Lake City, Utah:												
Anthracite—												
Stove	Crested Butte, Colo.	1912-13	4.00	5.00			5.00	9.00	9.00	11.50		2.59
		1915-16	4.00	5.00			5.00	9.00	9.00	11.50		2.50
		1920-21	8.60	7.13			7.13	15.73	15.73	16.50		.78
Chestnut	do											
Bituminous—												
Mine run	Castle Gate, Utah	1912-13	1.75	1.60			1.60	3.35	3.35	3.35		
		1915-16	1.75	1.60			1.60	3.35	3.35	3.35		
		1920-21	4.00	2.10			2.10	6.10	6.10	6.10		
Prepared sizes	do	1912-13	2.33	1.60			1.60	3.93	3.93	5.75		1.82
		1915-16	2.40	1.60			1.60	4.00	4.00	5.75		1.75
		1920-21	5.00	2.10			2.10	7.10	7.10	9.75		2.65
San Francisco, Calif.:												
Anthracite	Cerrillos, N. Mex.	1912-13	5.00	5.60			5.60	10.60	10.60	15.50		4.90
		1915-16	5.25	5.60			5.60	10.85	10.85	16.00		5.15
		1920-21	12.68	7.75			7.75	20.38	20.38	26.27		5.89
Bituminous	Gallup, N. Mex.	1912-13	3.00	5.15			5.15	8.15	8.15	13.50		5.35
		1915-16	2.35	5.15			5.15	7.50	7.50	13.50		6.00
		1920-21	6.50	7.25			7.25	13.75	13.75	20.50		6.75
Seattle, Wash., bituminous:												
Mine run	Carbonado, Wash.	1912-13	2.90	.58			.58	3.48	3.48	4.00		.52
		1915-16	2.90	.58			.58	3.48	3.48	4.13		.52
		1920-21	7.10	1.13			1.13	8.23	8.23	9.75		1.53
Prepared sizes	do	1912-13	5.00	.58			.58	5.58	5.58	7.00		1.42
		1915-16	5.00	.58			.58	5.58	5.58	7.25		1.42
		1920-21	7.50	1.13			1.13	8.63	8.63	10.15		1.53
St. Louis, Mo.:												
Anthracite—												
Stove	Coxton, Pa.	1912-13	3.25	3.57			3.57	6.82	7.30	7.93	.49	1.11
		1915-16	3.31	3.79			3.79	7.10	7.75	8.50	.65	1.40
		1920-21	7.04	[1] 6.25			[1] 6.25	[1] 13.29	15.20	16.45	1.73	2.98
Chestnut	do	1912-13	3.46	3.57			3.57	7.03	7.55	8.18	.53	1.15
		1915-16	3.61	3.79			3.79	7.40	8.00	8.75	.60	1.35
		1920-21	7.04	[1] 6.25			[1] 6.25	[1] 13.29	15.45	16.70	1.98	3.23
Bituminous—												
Prepared sizes	Mount Olive and Stanton, Ill.	1912-13	1.33	.53			.53	1.85	2.25	3.13	.40	1.28
		1915-16	1.20	.53			.53	1.73	2.25	3.00	.53	1.28
		1920-21	3.63	1.30			1.30	4.92	5.88	7.13	.96	2.21
Do	Carterville district, Ill.	1912-13	1.28	.73			.73	2.00	2.75	3.50	.75	1.50
		1915-16	1.35	1.73			.73	2.08	2.79	3.44	.71	1.36
		1920-21	4.10	1.51			1.51	5.61	7.00	8.26	1.40	2.65

[1] War tax, 19 cents; excluded in computing ratios and per cent.

Digitized by Google

TABLE A127.—*Statement showing the average mine, wholesale, and retail prices of coal and the average transportation cost from typical producing districts to typical markets, per net ton*—Continued.

Point of destination (market).	Point of origin.	Period.	Average mine price f.o.b. cars.	Transportation charges to destination.				Average mine price f.o.b. cars plus transportation charges to destination.	Average wholesale price at destination.	Average retail price at destination.	Spread between average mine price f.o.b. cars plus transportation charges to destination and—	
				Rail rate.	Loading charges.	Water rate.	Total charges.				Average wholesale price at destination.	Average retail price at destination.
1	2	3	4	5	6	7	8	9=(4+8)	10	11	12=(10—9)	13=(11—9)
Washington, D. C.:												
Bituminous—												
Mine Run	Cumberland and Piedmont	1912-13	$1.41	$1.47	.....	.....	$1.47	$2.88	$3.06	$3.07	$0.18	$0.89
		1915-16	1.52	1.47	.....	.....	1.47	2.99	3.17	3.97	.18	.98
		1920-21	4.50	2.84	.....	.....	2.84	7.34	7.68	9.04	.34	1.70
Do	Meyersdale district	1912-13	1.18	1.47	.....	.....	1.47	2.66	2.83	3.52	.18	.86
		1915-16	1.26	1.47	.....	.....	1.47	2.73	2.91	3.62	.18	.89
		1920-21	4.31	2.84	.....	.....	2.84	7.15	7.49	8.85	.34	1.71
Anthracite—												
Pennsylvania stove	Schuylkill and Lehigh	1912-13	3.53	1.79	.....	.....	1.79	5.31	5.31	6.53	.....	1.22
		1915-16	3.69	1.79	.....	.....	1.79	5.48	5.43	7.07	.....	1.59
		1920-21	7.49	3.25	.....	.....	3.25	10.74	10.74	13.30	.....	2.56
Pennsylvania chestnut	do	1912-13	3.66	1.79	.....	.....	1.79	5.45	5.45	6.64	.....	1.19
		1915-16	3.81	1.79	.....	.....	1.79	5.60	5.60	6.89	.....	1.29
		1920-21	7.49	3.25	.....	.....	3.25	10.74	10.74	13.21	.....	2.47
Milwaukee, Wis.:												
Anthracite—												
Stove coal [1]	Wyoming (Pa.) region	1912-13	3.19	3.35	.....	.....	3.35	6.54	6.90	7.90	.36	1.36
		1915-16	3.52	3.57	.....	.....	3.57	7.09	7.13	8.20	.....	1.12
		1920-21	6.96	[2] 5.88	.....	.....	[2] 5.88	[2] 13.02	13.85	16.10	.83	3.08
Chestnut [1]	do	1912-13	3.41	3.35	.....	.....	3.35	6.76	7.15	8.15	.39	1.39
		1915-16	3.65	3.57	.....	.....	3.57	7.22	7.38	8.45	.16	1.24
		1920-21	6.96	[2] 5.88	.....	.....	[2] 5.88	[2] 13.02	13.85	16.10	.83	3.08
Stove coal [3]	do	1912-13	3.19	1.78	$0.22	$0.35	2.35	5.45	6.80	7.80	1.35	2.35
		1915-16	3.52	1.78	.22	.35	2.35	6.01	7.15	8.30	1.14	2.29
		1920-21	6.96	[4] 3.25	.31	.60	[4] 4.16	[4] 11.15	13.75	16.00	2.60	4.85

Digitized by Google

Bituminous—														
Mine run [3]	Pocahontas district	1913–19	3.00	1.05	.22	.33	2.33	5.05	7.40	8.33	1.35	2.50
		1920–21	6.96	[4] 3.25	.31	.60	[4] 4.16	[4] 11.15	13.75	16.00	2.60	4.85
		1912–13	1.75	1.12	.05	.35	1.52	3.27	3.50	4.75	.23	1.48
		1915–16	1.30	1.12	.05	.30	1.47	2.77	3.58	4.88	.31	2.11
		1920–21	3.20	[5] 1.98	.09	.60	[5] 2.67	[5] 5.95	9.50	10.50	3.56	4.56
Prepared sizes [3]	do	1912–13	2.00	1.12	.05	.35	1.52	3.52	5.38	6.63	1.86	3.11
		1915–16	1.55	1.12	.05	.30	1.47	3.02	5.13	6.38	2.11	3.36
		1920–21	4.75	[5] 1.98	.09	.60	[5] 2.67	[5] 7.50	12.63	14.88	5.13	7.38

[1] All rail.

[2] War tax, 18 cents.

[3] Rail and water.

[4] War tax, 12 cents.

[5] War tax, 8 cents.

Digitized by Google

TABLE A127.—*Statement showing the average mine, wholesale, and retail prices of coal and the average transportation cost from typical producing districts to typical markets, per net ton*—Continued.

Point of destination (market).	Point of origin.	Period.	Per cent transportation charges of spread between average mine price f. o. b. cars and—		Ratio of transportation charges to—			Per cent increase each year over 1913 in—			
			Average wholesale price at destination.	Average retail price at destination.	Average mine price f. o. b. cars.	Average wholesale price at destination.	Average retail price at destination.	Average mine price f. o. b. cars.	Average wholesale price at destination.	Average retail price at destination.	Transportation charges to destination.
1	2	3	14=8+(10—4)	15=8+(11—4)	16=8+14	17=8+10	18=8+11	19	20	21	22
Baltimore, Md.:											
Anthracite—											
Pennsylvania stove.	Schuylkill and Lehigh district.	1912-13	.....	.....	51.29	33.91	25.75	.....	.....	.....	.....
		1915-16	.....	.....	48.19	32.53	24.77	6.43	4.25	3.94	.....
		1920-21	.....	.....	43.00	29.80	24.07	117.06	107.06	94.67	81.97
Pennsylvania chestnut.	.....do.....	1912-13	.....	.....	49.39	33.06	24.93	.....	.....	.....	.....
		1915-16	.....	.....	46.79	31.89	24.17	5.56	3.67	3.11	.....
		1920-21	.....	.....	42.86	29.73	24.07	109.76	102.39	88.47	81.75
Bituminous, mine run.	Meyersdale district.....	1912-13	.....	.....	130.53	56.62	42.09	.....	.....	.....	.....
		1915-16	.....	.....	112.18	52.87	37.63	16.38	7.10	11.85	.....
		1920-21	.....	.....	75.75	43.10	34.37	242.60	161.18	143.41	98.81
Birmingham, Ala., bituminous, lump.	Mary Lee seam.....	1912-13	100.00	16.00	18.46	15.59	8.57	.....	.....	.....	.....
		1915-16	100.00	17.91	19.05	16.00	9.23	13.08	12.60	17.14	.....
		1920-21	100.00	31.82	26.92	21.21	14.58	100.00	114.29	71.43	191.67
Bridgeport, Conn., anthracite:											
Stove.....	Lehigh and Wilkes-Barre district (via L. V. and C. N. E. R. R.).	1912-13	100.00	54.79	72.54	42.04	31.21	.....	.....	.....	.....
		1915-16	100.00	49.64	66.45	39.92	28.41	9.16	5.31	9.85	.....
		1920-21	100.00	47.95	47.45	32.18	23.85	168.67	129.59	130.00	75.73
Chestnut.....	Lehigh and Wilkes-Barre district.	1912-13	100.00	53.51	71.45	41.53	30.82	.....	.....	.....	.....
		1915-16	100.00	50.24	65.40	39.54	28.41	8.62	5.04	7.41	.....
		1920-21	100.00	46.06	49.45	33.09	23.85	152.41	120.57	124.89	75.73
Steve.....	Wilkes-Barre district (via Pennsylvania R. R.).	1912-13	100.00	60.64	80.29	44.53	34.55	.....	.....	.....	.....
		1915-16	100.00	54.94	73.55	42.38	31.45	9.16	5.08	9.85	.....
		1920-21	100.00	47.95	47.45	32.18	23.85	168.67	119.73	130.00	88.73
Chestnut.....	.....do.....	1912-13	100.00	59.23	74.62	44.02	33.78	.....	.....	.....	.....
		1915-16	100.00	55.61	72.38	41.99	31.45	8.62	4.88	7.41	.....
		1920-21	100.00	46.06	49.45	33.09	23.85	152.41	111.20	124.89	88.73

Digitized by Google

Prepared sizes	Bear Creek, Mont	1912-13	46.19	46.19	80.00	29.28	29.28				
		1915-16	44.38	44.39	64.67	28.45	28.45				
		1920-21	36.50	36.50	43.24	19.79	19.79	11.00	1.65	1.65	1 7.50
Do	Kirby, Wyo	1912-13	56.18	56.18	120.00	33.27	33.27	122.00	77.83	77.83	20.00
		1915-16	47.99	47.90	80.76	31.10	31.10	2.50	1 5.68	1 5.68	1 23.33
		1920-21	50.76	50.76	62.10	27.98	27.98	133.50	65.56	65.56	20.83
Little Rock, Ark.:											
Anthracite—											
Arkansas stove	Spadra, Ark	1912-13	100.60	45.62	80.00	28.08	18.10				
		1915-16	100.00	45.88	26.82	21.15	16.92	2.50	1 1.06	1 1.06	1 8.33
		1920-21	100.00	99.97	23.85	15.93	14.64	131.25	119.42	122.47	80.00
Arkansas egg	do	1912-13	100.00	38.16	24.21	19.41	14.81				
		1915-16	100.00	36.00	21.18	17.48	12.23	2.91	.39		1 10.00
		1920-21	100.00	82.19	19.13	16.06	12.00	130.23	129.43	133.33	80.00
Bituminous—											
Mine run	Earlington, Ky	1912-13	100.00	67.56	173.08	63.38	48.60				
		1915-16	100.00	70.14	167.86	62.67	40.47	7.69	5.63	2.50	4.44
		1920-21	98.85	47.68	134.38	57.00	35.18	121.58	91.27	137.58	72.00
Lump	Johnson City, Ill	1912-13	100.00	60.00	112.50	52.94	39.13				
		1915-16	100.00	52.66	110.33	52.46	39.97	6.50	5.41	2.26	4.44
		1920-21	74.45	31.51	68.59	35.70	21.59	112.50	92.12	134.78	29.56
Los Angeles, Calif.:											
Anthracite—											
Stove	Crested Butte, Colo	1912-13	100.00	72.70	160.00	61.54	50.00				
		1915-16	100.00	41.40	111.54	52.73	30.21	30.00	5.77	50.00	1 9.38
		1920-21	100.00	61.97	109.72	52.22	35.27	80.00	45.19	75.00	22.44
Do	Cerrillos, N. Mex	1912-13	100.00	57.89	84.62	45.84	24.38				
		1915-16	100.00	55.00	46.43	31.71	27.08	115.39	70.83	50.00	18.18
		1920-21	100.00	55.39	76.60	43.37	32.14	80.77	72.92	75.00	63.64
Bituminous, lump	Gallup, N. Mex	1912-13	100.00	52.82	187.27	65.19	41.20				
		1915-16	100.00	54.20	230.63	69.76	48.88	1 10.91	2.54	3.00	9.71
		1920-21	96.31	61.05	109.43	51.79	39.19	104.91	77.22	48.00	40.78
Manchester, N. H., anthracite:											
Stove	Delaware & Hudson	1912-13	58.71	55.97	85.35	36.30	33.80				
		1915-16	54.53	52.12	82.17	32.78	31.89	2.13	4.35	4.23	1 1.77
		1920-21	53.50	52.11	65.32	29.41	28.99	117.78	97.10	94.37	66.67
Do	Lehigh Valley and Philadelphia & Reading	1912-13	64.83	61.67	84.87	36.75	35.72				
		1915-16	56.76	56.16	87.93	35.28	34.27	1 2.48	4.35	4.23	
		1920-21	56.31	54.87	72.10	31.62	31.16	99.60	97.10	94.37	66.66
Chestnut	Delaware & Hudson	1912-13	59.46	56.66	83.80	36.30	33.80				
		1915-16	60.20	57.28	71.95	32.78	31.89	14.53	4.35	4.23	1 1.77
		1920-21	60.49	58.65	57.31	29.41	28.99	143.72	97.10	94.37	66.67
Do	Lehigh Valley and Philadelphia & Reading	1912-13	68.39	64.89	79.45	36.75	35.72				
		1915-16	66.09	61.91	70.70	35.28	34.27	8.51	4.35	4.23	
		1920-21	62.07	60.36	64.45	31.62	31.16	109.02	97.10	94.37	66.67

[1] Decrease.

Digitized by Google

TABLE A127.—*Statement showing the average mine, wholesale, and retail prices of coal and the average transportation cost from typical producing districts to typical markets, per net ton*—Continued.

Point of destination (market).	Point of origin.	Period.	Per cent transportation charges of spread between average mine price f. o. b. cars and—		Ratio of transportation charges to—			Per cent increase each year over 1913 in—			
			Average wholesale price at destination.	Average retail price at destination.	Average mine price f. o. b. cars.	Average wholesale price at destination.	Average retail price at destination.	Average mine price f. o. b. cars.	Average wholesale price at destination.	Average retail price at destination.	Transportation charges to destination.
1	2	3	14=8+(10—4)	15=8+(11—4)	16=8+14	17=8+10	18=8+11	19	20	21	22
New Orleans, La., bituminous:											
Mine run	Alabama	1912-13	92.60	71.40	125.00	53.20	45.45				
		1915-16	103.70	80.00	133.33	58.33	50.00	5.00	2.13	1.82	12.00
		1920-21	83.30	64.50	68.97	37.74	33.38	262.50	181.91	172.73	100.00
Do	West Kentucky	1912-13	96.80	75.00	200.00	65.22	54.55				
		1915-16	106.50	82.50	206.25	70.27	58.93	6.67	2.17	1.82	11.00
		1920-21	90.20	70.50	83.56	43.38	38.24	350.00	182.61	168.18	88.00
Prepared sizes (first class).	Alabama	1912-13	71.40	34.20	41.67	26.32	18.80				
		1915-16	80.00	38.40	46.67	29.47	21.05				12.00
		1920-21	71.40	41.70	34.48	23.26	18.87	141.67	126.32	99.25	100.00
Do	West Kentucky	1912-13	75.00	36.60	75.00	37.50	24.59				
		1915-16	82.50	40.20	82.50	41.25	27.05				11.00
		1920-21	75.20	45.10	55.02	31.77	24.79	156.25	121.88	86.48	88.00
Newark, N. J., anthracite:											
Pennsylvania stove	Lehigh and Wyoming region	1912-13			45.11	31.09	21.57				
		1915-16			38.75	27.93	20.51	10.73	5.87		[1] 4.90
		1920-21			34.11	25.24	18.48	119.65	104.57	93.82	66.08
Pennsylvania chestnut	do	1912-13			42.18	29.67	21.57				
		1915-16			37.36	27.20	19.80	7.37	3.73	3.62	[1] 4.90
		1920-21			34.11	25.24	18.48	105.40	95.23	93.82	66.08
New York, N. Y., anthracite:											
Stove	Lehigh and Wilkes-Barre	1912-13	100	41.02	45.06	31.06	21.47				
		1915-16	100	37.59	38.84	27.98	19.10	10.57	5.83	7.14	[1] 4.69
		1920-21	100	36.20	34.10	25.43	17.56	119.75	103.16	103.38	66.22
Chestnut	do	1912-13	100	40.71	42.09	29.62	20.70				
		1915-16	100	37.42	37.41	27.23	18.71	7.94	5.70	5.48	[1] 4.69
		1920-21	100	36.20	34.10	25.43	17.56	105.26	95.74	93.01	66.22

Digitized by Google

Stove	Anthracite region (Philadelphia & Reading R. R.)	1912-13			44.44	30.77	24.76				
		1915-16			40.00	28.57	22.78	11.11	7.69	8.68	
		1920-21			29.80	22.96	18.20	133.04	109.41	112.54	56.25
Chestnut	do										
Salt Lake City, Utah:											
Anthracite—											
Stove	Crested Butte, Colo.	1912-13	100	66.67	125.00	55.56	43.48				
		1915-16	100	66.67	125.00	55.56	43.48				
		1920-21	100	90.19	82.85	45.31	43.18	115.00	74.72	43.48	42.50
Chestnut	do										
Bituminous—											
Mine run	Castle Gate, Utah	1912-13			91.43	47.76	47.76				
		1915-16			91.43	47.76	47.76				
		1920-21			52.50	34.43	34.43	128.57	82.09	82.09	31.25
Prepared sizes	do	1912-13	100	46.78	68.67	40.71	27.83				
		1915-16	100	47.76	66.67	40.00	27.83	3.00	1.78		
		1920-21	100	44.21	42.00	29.58	21.54	114.59	80.66	69.57	31.25
San Francisco, Calif.:											
Anthracite	Cerrillos, N. Mex.	1912-13			112.00	52.83	36.13				
		1915-16			106.67	51.61	35.00	5.00	2.36	3.23	
		1920-21			61.39	38.03	29.50	152.50	92.26	69.48	38.39
Bituminous	Gallup, N. Mex.	1912-13			171.67	63.19	38.15				
		1915-16			219.15	68.67	38.15	[1] 21.67	[1] 7.98		
		1920-21			111.54	52.73	35.37	116.67	68.71	51.86	40.78
Seattle, Wash., bituminous:											
Mine run	Carbonado, Wash.	1912-13	100	52.73	20.00	16.67	14.50				
		1915-16	100	47.15	20.00	16.67	14.50			6.25	
		1920-21	100	42.45	15.85	13.68	11.54	144.83	136.35	143.75	19.40
Prepared sizes	do	1912-13	100	29.00	11.60	10.39	8.29				
		1915-16	100	25.78	11.60	10.39	8.00			3.57	
		1920-21	100	42.45	15.00	13.04	11.08	50.00	54.57	45.00	19.40
St. Louis, Mo.:											
Anthracite—											
Stove	Coxton, Pa.	1912-13	88.04	76.28	110.02	48.90	45.05				
		1915-16	85.36	73.04	114.50	48.90	44.59	2.00	6.16	7.26	6.16
		1920-21	76.55	66.38	88.84	41.12	37.99	116.80	108.22	107.57	75.07
Chestnut	do	1912-13	87.18	75.64	103.33	47.28	43.67				
		1915-16	86.33	73.74	104.99	47.38	43.44	4.49	5.96	7.03	6.16
		1920-21	74.27	64.67	88.84	40.45	37.43	103.62	104.63	104.28	75.07
Bituminous—											
Prepared sizes	Mount Olive and Stanton, Ill.	1912-13	54.97	29.17	39.62	23.33	16.80				
		1915-16	50.00	29.17	43.75	23.33	17.50	[1] 9.43		[1] 4.00	
		1920-21	58.73	37.00	35.72	22.64	18.18	173.58	161.11	128.00	146.67
Do	Carterville district, Ill.	1912-13	49.52	32.58	56.86	26.36	20.71				
		1915-16	50.43	34.73	53.70	26.01	21.09	5.88	1.36	[1] 1.79	
		1920-21	51.90	36.26	36.71	21.50	18.24	221.57	154.55	135.71	107.59

[1] Decrease.

Digitized by Google

TABLE A127.—*Statement showing the average mine, wholesale, and retail prices of coal and the average transportation cost from typical producing districts to typical markets, per net ton*—Continued.

Point of destination (market).	Point of origin.	Period.	Per cent transportation charges of spread between average mine price f. o. b. cars and—		Ratio of transportation charges to—			Per cent increase each year over 1913 in—			
			Average wholesale price at destination.	Average retail price at destination.	Average mine price f. o. b. cars.	Average wholesale price at destination.	Average retail price at destination.	Average mine price f. o. b. cars.	Average wholesale price at destination.	Average retail price at destination.	Transportation charges to destination.
1	2	3	14=8÷(10−4)	15=8÷(11−4)	16=8÷14	17=8÷10	18=8÷11	19	20	21	22
Washington, D. C.:											
Bituminous—											
Mine run	Cumberland and Piedmont	1912-13	89.27	62.26	104.77	48.20	39.05				
		1915-16	89.27	60.00	97.03	46.50	37.08	7.97	3.66	5.33	
		1920-21	89.27	62.50	83.13	36.98	31.40	219.91	161.24	189.66	92.74
Do	Meyersdale district	1912-13	89.27	63.06	124.61	51.99	41.86				
		1915-16	89.27	62.28	117.09	50.65	40.66	6.34	2.65	2.96	
		1920-21	89.27	62.42	85.93	37.92	32.06	242.29	164.24	181.61	92.74
Anthracite—											
Pennsylvania stove	Schuylkill and Lehigh	1912-13			50.84	33.82	27.35				
		1915-16			48.39	32.91	25.27	4.65	2.15	8.27	
		1920-21			43.38	30.26	24.44	112.42	102.18	103.69	81.97
Pennsylvania chestnut	do	1912-13			48.78	32.79	26.89				
		1915-16			46.58	31.92	25.92	4.07	2.74	3.75	
		1920-21			43.41	30.27	24.61	194.48	97.10	98.87	81.97
Milwaukee, Wis.:											
Anthracite—											
Stove coal [1]	Wyoming (Pa.) district	1912-13	90.30	71.13	105.02	48.55	42.41				
		1915-16	98.89	76.28	101.42	50.07	43.54	10.34	3.33	3.80	6.50
		1920-21	[2] 85.35	[2] 64.33	[2] 84.48	[2] 42.45	[2] 36.52	118.18	100.72	103.80	[2] 75.62
Chestnut [1]	do	1912-13	89.87	70.87	98.24	46.85	41.10				
		1915-16	96.71	74.38	97.81	48.37	42.26	7.04	3.22	3.68	6.57
		1920-21	[2] 85.35	[2] 64.33	[2] 84.48	[2] 42.48	[2] 36.52	104.11	93.71	97.55	[2] 75.52
Stove coal [3]	do	1912-13	62.51	50.00	75.81	34.56	30.13				
		1915-16	67.34	50.95	64.21	32.87	28.31	15.06	5.15	6.41	
		1920-21	[2] 60.46	[2] 45.56	[2] 60.55	[2] 30.25	[2] 26.00	121.61	102.21	108.13	[2] 77.62
Chestnut [3]	do	1912-13	63.00	49.56	79.79	34.82	29.19				
		1915-16	65.51	48.43	66.41	31.79	27.45	11.45	4.09	6.41	
		1920-21	[2] 60.46	[2] 45.56	[2] 60.55	[2] 30.25	[2] 26.00	111.45	102.21	108.13	[2] 77.62

Digitized by Google

Mine run [2]	Poconontas district	1912-13	85.86	50.67	86.86	43.43	32.00				
		1915-16	64.62	46.12	113.08	41.12	30.15	[4] 25.71	2.14	2.63	[4] 3.29
		1920-21	[3] 42.30	[3] 36.51	[3] 83.28	[3] 28.05	[3] 25.38	82.86	171.43	121.06	[3] 75.83
Prepared sizes [2]	do.	1912-13	45.04	32.86	76.00	28.28	22.94				
		1915-16	41.12	30.47	94.84	28.68	23.06	[4] 22.50	[4] 4.65	[4] 3.77	[4] 3.29
		1920-21	[3] 33.84	[3] 26.32	[3] 56.11	[3] 21.11	[3] 17.92	187.50	184.88	124.53	[3] 75.33

[1] All rail.
[2] War tax excluded from transportation charge in computing ratio and per cent.
[3] Rail and water.
[4] Decrease.

Digitized by Google

TABLE A128.

DROP SIDING NO. 2—FROM EVERETT, WASH., TO ABERDEEN, S. DAK.

Period.	Producer's price f. o. b. cars point of origin in car lots per M feet.	Freight cost to destination in car lots per M feet.	Producer's price plus freight cost to destination per M feet.	Average retail price paid by consumer per M feet.	Per cent freight cost to price paid—			Spread between producer's price and price paid by consumer.	Per cent freight cost is of spread between producer's price and price paid by consumer.
					To producer.	By retailer.	By consumer.		
3	4	5	6=(4+5).	8	9=(5÷4).	10=(5÷7).	11=(5÷8).	13=(8−4).	15=(5÷13).
1912–13.									
October	$18.50	$8.00	$26.50	$40.00	43.24	29.63	20.00	$21.50	37.21
November	17.50	8.00	25.50	40.00	45.71	29.63	20.00	22.50	35.56
December	17.50	8.00	25.50	40.00	45.71	29.63	20.00	22.50	35.56
January	17.50	8.00	25.50	40.00	45.71	29.63	20.00	22.50	35.56
February	18.50	8.00	26.50	40.00	43.24	29.63	20.00	21.50	37.21
March	18.50	8.00	26.50	40.00	43.24	30.19	20.00	21.50	37.21
April	18.50	8.00	26.50	40.00	43.24	30.19	20.00	21.50	37.21
May	18.50	8.00	26.50	40.00	43.24	30.19	20.00	21.50	37.21
June	18.50	8.00	26.50	40.00	43.24	30.19	20.00	21.50	37.21
July	17.50	8.00	25.50	40.00	45.71	30.19	20.00	22.50	35.56
August	17.00	8.00	25.50	40.00	47.06	30.19	20.00	23.00	34.78
September	16.00	8.00	24.00	40.00	50.00	30.19	20.00	24.00	33.33
Average	17.833	8.00	25.83	40.00	44.86	29.95	20.00	22.167	36.06
1915–16.									
October	15.00	8.00	23.00	34.00	53.33	34.78	23.53	19.00	42.11
November	18.00	8.00	26.00	34.00	44.44	34.78	23.53	16.00	50.00
December	19.00	8.00	27.00	34.00	42.11	34.78	23.53	15.00	53.33
January	19.00	8.00	27.00	34.00	42.11	34.78	23.53	15.00	53.33
February	19.00	8.00	27.00	34.00	42.11	34.78	23.53	15.00	53.33
March	20.00	8.00	28.00	35.00	40.00	33.33	22.86	15.00	53.33
April	20.00	8.00	28.00	35.00	40.00	33.33	22.86	15.00	53.33
May	20.50	8.00	28.50	35.00	39.02	33.33	22.86	14.50	55.17
June	20.50	8.00	28.50	35.00	39.02	33.33	22.86	14.50	55.17
July	18.00	8.00	26.00	35.00	44.44	33.33	22.86	17.00	47.06
August	18.00	8.00	26.00	35.00	44.44	33.33	22.86	17.00	47.06
September	18.00	8.00	26.00	35.00	44.44	33.33	22.86	17.00	47.06
Average	18.75	8.00	26.75	34.58	42.67	33.96	23.18	15.83	50.84

Digitized by Google

October	41.00	12.00	53.00	85.00	29.27	20.69	14.12	44.00	27.27
November	36.00	12.00	48.00	83.00	33.33	21.43	14.46	47.00	25.53
December	31.00	12.00	43.00	75.00	38.71	23.53	16.00	44.00	27.27
January	28.00	12.00	40.00	53.00	42.86	32.43	22.64	25.00	48.00
February	23.00	12.00	35.00	53.00	52.17	32.43	22.64	30.00	40.00
March	23.00	12.00	35.00	53.00	52.17	32.43	22.64	30.00	40.00
April	21.00	12.00	33.00	52.00	57.14	33.33	23.08	31.00	38.71
May	21.00	12.00	33.00	52.00	57.14	33.33	23.08	31.00	38.71
June	21.00	12.00	33.00	51.00	57.14	34.29	23.53	30.00	40.00
July	21.00	12.00	33.00	51.00	57.14	34.29	23.53	30.00	40.00
August	23.00	12.00	35.00	52.00	52.17	33.33	23.08	29.00	41.38
September	23.00	12.00	35.00	53.00	52.17	32.43	22.64	30.00	40.00
Average	26.00	12.00	38.00	59.42	46.30	29.33	20.20	33.50	35.82

2 BY 4 BY 14—FROM EVERETT, WASH., TO BOZEMAN, MONT.

1912-13.									
October	$8.00	$9.10	$17.10	$25.00	113.8	45.5	36.4	$17.00	53.5
November	7.00	9.10	16.10	25.00	130.0	45.5	36.4	18.00	50.6
December	6.50	9.10	15.60	25.00	140.0	50.6	36.4	18.50	49.2
January	6.50	9.10	15.60	24.00	140.0	50.6	37.9	17.50	52.0
February	7.50	9.10	16.60	25.00	121.4	47.9	36.4	17.50	52.0
March	7.50	9.10	16.60	25.00	121.4	47.9	36.4	17.50	52.0
April	7.50	9.10	16.60	25.00	121.4	47.9	36.4	17.50	52.0
May	6.50	9.10	15.60	25.00	140.0	47.9	36.4	18.50	49.2
June	6.00	9.10	15.10	25.00	151.7	50.6	36.4	19.00	47.9
July	5.00	9.10	14.10	25.00	182.0	50.6	36.4	20.00	45.5
August	4.50	9.10	13.60	25.00	202.2	50.6	36.4	20.50	44.4
September	4.00	9.10	13.10	25.00	227.5	53.5	36.4	21.00	43.3
Average	6.375	9.10	15.48	24.92	142.7	49.0	36.5	18.54	49.1
1915-16.									
October	6.50	9.10	15.60	22.00	140.0	52.0	41.4	15.50	58.7
November	8.00	9.10	17.10	22.50	113.8	49.2	40.4	14.50	62.8
December	8.50	9.10	17.60	25.00	107.1	45.5	36.4	16.50	55.2
January	9.00	9.10	18.10	25.00	101.1	50.6	36.4	16.00	56.9
February	9.00	9.10	18.10	25.00	101.1	47.9	36.4	16.00	56.9
March	10.00	9.10	19.10	25.00	91.0	47.9	36.4	15.00	60.7
April	10.00	9.10	19.10	25.00	91.0	45.5	36.4	15.00	60.7
May	10.50	9.10	19.60	25.00	86.7	45.5	36.4	14.50	62.8
June	10.50	9.10	19.60	25.00	86.7	45.5	36.4	14.50	62.8
July	9.00	9.10	18.10	25.00	101.1	45.5	36.4	16.00	56.9
August	9.00	9.10	18.10	25.00	101.1	44.9	36.4	16.00	56.9
September	9.00	9.10	18.10	25.00	101.1	44.9	36.4	16.00	56.9
Average	9.083	9.10	18.183	24.54	100.2	47.0	37.1	15.46	58.9

Digitized by Google

TABLE A128—Continued.

2 BY 4 BY 14—FROM EVERETT, WASH., TO BOZEMAN, MONT.—Continued.

Period.	Producer's price f. o. b. cars point of origin in car lots per M feet.	Freight cost to destination in car lots per M feet.	Producer's price plus freight cost to destination per M feet.	Average retail price paid by consumer per M feet.	Per cent freight cost to price paid— To producer.	By retailer.	By consumer.	Spread between producer's price and price paid by consumer.	Per cent freight cost is of spread between producer's price and price paid by consumer.
3	4	5	6=(4+5).	8	9=(5÷4).	10=(5÷7).	11=(5÷8).	13=(8—4).	15=(5÷13).
1920-21.									
October	$21.50	$13.00	$34.50	$50.00	60.5	30.1	26.0	$28.50	45.6
November	18.50	13.00	31.50	50.00	70.3	30.1	26.0	31.50	41.3
December	15.50	13.00	28.50	45.00	83.9	37.1	28.9	29.50	44.1
January	13.50	13.00	26.50	35.00	96.3	45.6	37.1	21.50	60.5
February	14.50	13.00	27.50	35.00	89.7	45.6	37.1	20.50	63.4
March	11.50	13.00	24.50	35.00	113.0	49.1	37.1	23.50	55.3
April	12.50	13.00	25.50	35.00	104.0	51.0	37.1	22.50	57.8
May	11.50	13.00	24.50	35.00	113.0	50.0	37.1	23.50	55.3
June	10.50	13.00	23.50	35.00	123.8	50.0	37.1	24.50	53.1
July	10.50	13.00	23.50	32.00	123.8	53.1	40.6	21.50	60.5
August	7.00	13.00	20.00	32.00	185.7	81.0	40.6	25.00	52.0
September	10.00	13.00	23.00	32.00	130.0	53.1	40.6	22.00	59.1
Average	13.083	13.00	26.083	37.58	99.4	43.7	34.6	24.50	53.1

COMMON BOARDS, 8 AND 10 FOOT, FROM EVERETT, WASH., TO DEVILS LAKE, N. DAK.

1912-13.									
October	$8.00	$10.00	$18.00	[1] $36.00	125.00	54.05	40.00	$17.00	58.82
November	8.00	10.00	18.00	[1] 36.00	125.00	54.05	40.00	17.00	58.82
December	7.50	10.00	17.50	[1] 36.00	133.33	54.05	40.00	17.50	57.14
January	7.50	10.00	17.50	36.00	133.33	54.05	40.00	17.50	57.14
February	8.50	10.00	18.50	36.00	117.65	54.05	40.00	18.50	60.61
March	8.50	10.00	18.50	36.00	117.65	54.05	40.00	18.50	60.61
April	8.50	10.00	18.50	36.00	117.65	54.05	40.00	18.50	60.61
May	7.50	10.00	17.50	36.00	133.33	54.05	40.00	17.50	57.14

Digitized by Google

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
September	5.50	10.00	15.50	25.00	181.82	54.05	40.00	19.50	51.28
	5.50	10 00.	15.50	25.00	181.82	54.05	40.00	19.50	51.28
Average	7.333	10.00	17.33	25.00	136.37	54.05	40.00	17.67	56.59
1915–16.									
October	8.50	10.00	18.50	25.00	117.65	54.05	40.00	16.50	60.61
November	8.50	10.00	18.50	25.00	117.65	54.05	40.00	16.50	60.61
December	10.00	10.00	20.00	25.00	100.00	54.05	40.00	15.00	66.67
January	10.00	10.00	20.00	28.00	100.00	48.51	35.71	18.00	55.56
February	10.00	10.00	20.00	28.00	100.00	48.51	35.71	18.00	55.56
March	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
April	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
May	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
June	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
July	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
August	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
September	11.50	10.00	21.50	28.00	86.96	43.51	35.71	16.50	60.61
Average	10.66	10.00	20.65	27.25	93.90	43.19	36.70	16.60	60.24
1920–21.									
October	24.50	15.00	39.50	40.00	61.22	46.15	37.50	16.50	90.91
November	19.50	15.00	34.50	40.00	76.92	46.15	37.50	20.50	73.17
December	17.50	15.00	32.50	40.00	85.71	47.62	37.50	22.50	66.67
January	13.50	15.00	30.50	40.00	96.77	49.18	37.50	24.50	61.22
February	12.50	15.00	27.50	35.00	120.00	54.55	42.86	22.50	66.67
March	12.50	15.00	27.50	35.00	120.00	54.55	42.86	23.50	64.67
April	12.50	15.00	27.50	35.00	120.00	54.55	42.86	22.50	66.67
May	12.50	15.00	27.50	35.00	120.00	54.55	42.86	22.50	66.67
June	12.50	15.00	27.50	32.00	120.00	56.60	46.88	19.50	76.92
July	12.50	15.00	27.50	32.00	120.00	58.82	46.88	19.50	76.92
August	11.50	15.00	26.50	32.00	130.43	58.82	46.88	20.50	73.17
September	11.50	15.00	26.50	32.00	130.43	58.82	46.88	20.50	73.17
Average	14.583	15.00	29.58	35.67	102.86	52.95	42.05	21.09	71.12

NO. 1 YELLOW PINE, 2 BY 4 INCHES BY 16 FEET, FROM LAUREL, MISS., TO CINCINNATI, OHIO.

1912–13.									
October	$14.00	$5.67	$19.67	$26.00	40.5	24.7	21.8	$12.00	47.3
November	15.00	5.67	20.67	26.50	37.8	24.1	21.4	11.50	49.3
December	13.75	5.67	19.42	26.50	41.2	24.7	21.4	12.75	44.5
January	12.50	5.67	18.17	27.00	45.4	23.6	21.0	14.50	39.1
February	13.00	5.67	18.67	27.00	43.6	23.6	21.0	14.00	40.5

[1] No records for 1912; estimated same as 1913.

Digitized by Google

TABLE A128—Continued.

NO. 1 YELLOW PINE, 2 BY 4 INCHES BY 16 FEET, FROM LAUREL, MISS., TO CINCINNATI, OHIO—Continued.

Period.	Producer's price f. o. b. cars point of origin in car lots per M feet.	Freight cost to destination in car lots per M feet.	Producer's price plus freight cost to destination per M feet.	Average retail price paid by consumer per M feet.	Per cent freight cost to price paid—			Spread between producer's price and price paid by consumer.	Per cent freight cost is of spread between producer's price and price paid by consumer.
					To producer.	By retailer.	By consumer.		
3	4	5	6=(4+5).	8	9=(5+4).	10=(5+7).	11=(5+8).	13=(8—4).	15=(5+13).
1912–13.									
March	$13.00	$5.67	$18.67	$27.00	43.6	23.6	21.0	$14.00	40.5
April	13.00	5.67	18.67	28.50	43.6	22.5	19.9	15.50	36.6
May	14.00	5.67	19.67	29.00	40.5	22.5	19.6	15.00	37.8
June	15.00	5.67	20.67	29.00	37.8	22.5	19.6	14.00	40.5
July	13.50	5.67	19.17	29.00	42.0	22.5	19.6	15.50	36.6
August	12.25	5.67	17.92	30.50	46.3	21.4	18.6	18.25	31.1
September	13.00	5.67	18.67	26.50	43.6	26.4	21.4	13.50	42.0
Average	13.50	5.67	19.17	27.70	42.0	23.4	20.5	14.20	39.9
1915–16.									
October	12.50	5.67	18.17	23.50	45.4	28.4	24.1	11.00	51.5
November	12.50	5.67	18.17	24.50	45.4	26.7	23.1	12.00	47.3
December	13.50	5.67	19.17	20.50	42.0	33.4	27.7	7.00	81.0
January	14.50	5.67	20.17	20.00	39.1	33.4	28.4	5.50	103.1
February	14.00	5.67	19.67	21.50	40.5	32.4	28.4	7.50	75.6
March	15.00	5.67	20.67	21.00	37.8	32.4	27.0	6.00	94.5
April	15.00	5.67	20.67	21.00	37.8	31.5	27.0	6.00	94.5
May	16.00	5.67	21.67	24.00	35.4	28.4	23.6	8.00	70.9
June	15.00	5.67	20.67	24.00	37.8	28.4	23.6	9.00	63.0
July	15.50	5.67	21.17	23.00	36.6	29.8	24.7	7.50	75.6
August	15.00	5.67	20.67	23.00	37.8	29.1	24.7	8.00	70.9
September	15.50	5.67	21.17	23.50	36.6	29.1	24.1	8.00	70.9
Average	14.50	5.67	20.17	22.46	39.1	30.1	25.2	7.96	71.2

Digitized by Google

1920-21.									
October	24.00	9.00	33.00	67.00	37.5	17.0	13.4	43.00	20.9
November	24.00	9.00	33.00	59.00	37.5	20.5	15.3	35.00	25.7
December	25.00	9.00	34.00	46.50	36.0	25.0	19.4	21.50	41.9
January	25.00	9.00	34.00	45.00	36.0	28.1	20.0	20.00	45.0
February	21.00	9.00	30.00	41.50	42.9	28.1	21.7	20.50	43.9
March	21.00	9.00	30.00	41.50	42.9	28.1	21.7	20.50	43.9
April	20.00	9.00	29.00	39.50	45.0	31.0	22.8	19.50	46.2
May	21.00	9.00	30.00	40.50	42.9	28.1	22.2	19.50	46.2
June	21.00	9.00	30.00	40.50	42.9	29.0	22.2	19.50	46.2
July	23.00	9.00	32.00	40.00	39.1	31.6	22.5	17.00	52.9
August	24.00	9.00	33.00	40.00	37.5	31.0	22.5	16.00	56.3
September	24.00	9.00	33.00	40.50	37.5	29.5	22.2	16.50	54.5
Average	22.75	9.00	31.75	45.12	39.6	26.4	19.9	22.37	40.2

YELLOW PINE, NO. 1 COMMON, 2 BY 4 INCHES BY 16 FEET, FROM BOGALUSA, LA., TO TOPEKA, KANS.

1912-13									
October	$17.00	$7.50	$24.50	$30.00	44.1	30.6	25.0	$13.00	57.7
November	.....	7.50	.....	27.50	.....	31.3	27.3	.....	.....
December	17.50	7.50	25.00	31.25	42.9	31.3	24.0	13.75	54.5
January	18.00	7.50	25.50	28.00	41.7	31.3	26.8	10.00	75.0
February	18.50	7.50	26.00	28.75	40.5	31.3	26.1	10.25	73.2
March	18.00	7.50	25.50	30.00	41.7	31.9	25.0	12.00	62.5
April	15.75	7.50	23.25	28.75	47.6	33.0	26.1	13.00	57.7
May	15.75	7.50	23.25	28.00	47.6	34.1	26.8	12.25	61.2
June	15.25	7.50	22.75	28.75	49.2	34.9	26.1	13.50	55.6
July	14.50	7.50	22.00	30.00	51.7	37.5	25.0	15.50	48.4
August	13.25	7.50	20.75	32.50	56.6	39.0	23.1	19.25	39.0
September	12.50	7.50	20.00	28.75	60.0	39.5	26.1	16.25	46.2
Average:									
All items each column	16.00	7.50	23.50	29.35	46.9	33.5	25.6	13.52	55.5
Comparable items all columns, columns 4 to 11 inclusive	16.00	7.50	23.50	29.52	46.9	33.7	25.4	.....	.....
1915-16									
October	11.75	7.50	19.25	25.83	63.1	37.0	29.0	14.08	53.3
November	12.75	7.50	20.25	25.83	58.8	32.6	29.0	13.08	57.3
December	14.25	7.50	21.75	27.50	52.6	31.9	27.3	13.25	56.6
January	16.50	7.50	24.00	29.17	45.5	31.6	25.7	12.67	59.2
February	16.00	7.50	23.50	28.33	46.9	31.6	26.5	12.33	60.8
March	15.75	7.50	23.25	29.17	47.6	31.9	25.7	13.42	55.9
April	15.75	7.50	23.25	29.17	47.6	32.3	25.7	13.42	55.9
May	15.00	7.50	22.50	29.17	50.0	32.6	25.7	14.17	52.9
June	15.00	7.50	22.50	30.00	50.0	33.7	25.0	15.00	50.0

Digitized by Google

TABLE A128—Continued.

YELLOW PINE, NO. 1 COMMON, 2 BY 4 INCHES BY 16 FEET, FROM BOGALUSA, LA., TO TOPEKA, KANS.—Continued.

Period.	Producer's price f. o. b. cars point of origin in car lots per M feet.	Freight cost to destination in car lots per M feet.	Producer's price plus freight cost to destination per M feet.	Average retail price paid by consumer per M feet.	Per cent freight cost to price paid—			Spread between producer's price and price paid by consumer.	Per cent freight cost is of spread between producer's price and price paid by consumer.
					To producer.	By retailer.	By consumer.		
3	4	5	6=(4+5).	8	9=(5÷4).	10=(5÷7).	11=(5÷8).	13=(8—4).	15=(5÷13).
July	$13.75	$7.50	$21.25	$20.00	54.5	36.6	25.0	$16.25	46.2
August	13.75	7.50	21.25	20.17	54.5	36.1	25.7	15.42	48.6
September	13.25	7.50	20.75	20.17	56.6	35.7	25.7	15.92	47.1
Average	14.46	7.50	21.96	28.55	51.9	33.5	26.3	14.09	53.2
1920–21									
October	35.00	9.00	44.00	61.67	25.7	22.9	14.6	26.67	33.7
November	25.25	9.00	34.25	60.83	35.6	24.7	14.8	35.58	25.3
December	23.00	9.00	32.00	52.50	39.1	28.5	17.1	29.50	30.1
January	25.00	9.00	34.00	46.67	36.0	25.7	19.3	21.67	41.5
February	21.25	9.00	30.25	46.67	42.4	25.9	19.3	25.42	35.4
March	20.25	9.00	29.25	41.67	44.4	26.9	21.6	21.42	42.0
April	21.00	9.00	30.00	41.67	42.9	28.1	21.6	20.67	43.5
May	20.75	12.00	32.75	41.67	57.8	36.4	28.8	20.92	57.4
June	21.50	12.00	33.50	38.33	55.8	35.3	31.3	16.83	71.3
July	23.50	12.00	35.50	38.33	51.1	36.6	31.3	14.83	80.9
August	21.75	12.00	33.75	38.33	55.2	36.6	31.3	16.58	72.4
September	22.00	12.00	34.00	38.33	54.5	36.4	31.3	16.33	73.8
Average	23.35	10.25	33.60	45.85	43.9	29.9	22.5	22.20	46.2

Digitized by Google

Average price received by producer, the average price paid by consumer, and the average transportation cost from typical producing points to typical consuming points.

LUMBER.

Point of destination (market).	Point of origin.	Period.	Producer's price f. o. b. cars point of origin in car lots per M feet.	Freight cost to destination in car lots per M feet.	Producer's price plus freight cost to destination per M feet.	Average retail price paid by consumer per M feet.	Per cent freight cost to price paid—			Spread between producer's price and price paid by—		Per cent freight cost is of spread between producer's price and price paid by—	
							To producer.	By retailer.	By consumer.	Retailer.	Consumer.	Retailer.	Consumer.
1	2	3	4	5	6=(4+5)	8	9	10	11	12=(7−4)	13=(8−4)	14=(5÷12)	15=(5÷13)
Topeka, Kans.:													
No. 2 drop siding, yellow pine.	Bogalusa, La.	1912–13	$13.87	$5.25	$19.12	$24.79	37.85	19.49	21.18	$13.50	$11.13	39.92	47.17
		1915–16	13.71	5.25	18.96	27.71	28.29	20.64	18.95	11.73	14.00	44.76	37.50
		1920–21	19.58	10.90	30.48	44.86	55.67	25.65	24.30	22.92	25.28	47.56	43.12
Cincinnati, Ohio:													
No. 2 common, 8 by 10, yellow pine.	Laurel, Miss.	1912–13	14.76	5.67	19.84	30.20	40.00	21.00	18.80	12.87	16.03	44.10	35.40
		1915–16	14.48	5.67	20.15	27.12	39.20	24.00	20.90	9.12	12.64	62.20	44.90
		1920–21	16.98	9.00	25.98	45.79	53.00	26.50	19.70	16.98	28.81	53.00	31.20
New Orleans, La.:													
No. 2 common, 8-inch boards, yellow pine.	Bogalusa, La.	1912–13	14.08	2.00	16.08	40.19	14.20	7.60	4.30	18.66	33.06	15.30	6.00
		1915–16	13.29	2.50	15.79	46.08	18.80	9.60	5.40	13.62	33.62	18.40	7.40
		1920–21	18.69	3.00	21.69	50.33	16.10	9.90	6.00	11.64	31.64	25.80	9.50
Devils Lake, N. Dak.:													
2 by 4, 16-foot.	Everett, Wash.	1912–13	6.38	10.40	16.78	25.90	163.10	54.70	41.60	12.63	18.63	55.80	55.80
		1915–16	9.08	10.40	19.48	20.00	114.50	50.10	40.00	11.67	16.92	61.50	61.50
		1920–21	13.24	15.60	28.84	34.50	117.80	55.20	45.20	15.01	21.26	103.90	73.40
Bozeman, Mont.:													
2 by 4, 14-foot.	Everett, Wash.	1912–13	6.38	9.10	15.48	24.92	142.70	49.00	36.50	12.20	18.54	74.60	49.10
		1915–16	9.08	9.10	18.18	24.54	100.20	47.00	37.10	10.29	15.46	88.40	58.90
		1920–21	13.08	13.00	26.08	37.58	99.40	43.70	34.60	16.67	24.50	78.00	53.10
Drop siding.		1912–13	17.83	7.00	24.83	32.67	39.26	28.87	21.43	6.42	14.84	109.03	47.17
		1915–16	18.75	7.00	25.75	33.58	37.33	26.46	20.85	7.71	14.83	90.79	47.20
		1920–21	26.00	10.00	36.00	60.00	38.46	24.52	16.67	14.79	34.00	67.61	29.41
Common 8 by 10 boards.	**Seattle, Wash.**	1912–13	8.70	8.75	17.45	25.00	100.57	44.92	35.00	10.88	16.30	80.42	53.68
		1915–16	10.36	8.75	19.11	23.12	85.04	50.17	37.85	6.89	12.78	127.00	68.47
		1920–21	16.13	12.50	28.63	37.33	77.50	43.16	33.49	15.18	23.50	82.35	53.19

Digitized by Google

TABLE A 128—Continued.

Average price received by producer, the average price paid by consumer, and the average transportation cost from typical producing points to typical consuming points—Continued.

LUMBER—Continued.

Point of destination (market).	Point of origin.	Period.	Producer's price f. o. b. cars point of origin in car lots per M feet.	Freight cost to destination in car lots per M feet.	Producer's price plus freight cost to destination per M feet.	Average retail price paid by consumer per M feet.	Per cent freight cost to price paid—			Spread between producer's price and price paid by—		Per cent freight cost is of spread between producer's price and price paid by—	
							To producer.	By retailer.	By consumer.	Retailer.	Consumer.	Retailer.	Consumer.
1	2	3	4	5	6=(4+5)	8	9	10	11	12=(7−4)	13=(8−4)	14=(5÷12)	15=(5÷13)
Lincoln, Nebr:													
No. 2 flooring	Seattle, Wash.	1912–13	$23.77	$10.00	$33.77	$47.50	42.07	29.63	21.05	$9.98	$23.73	100.20	42.14
		1915–16	22.44	10.00	32.44	45.00	44.56	32.00	22.22	9.25	22.56	108.11	44.33
		1920–21	48.67	14.47	63.14	82.50	29.73	22.52	17.54	17.62	36.33	82.12	39.83
Dubuque, Iowa:													
Drop siding	do	1912–13	17.55	11.00	28.55	35.00	62.68	39.29	31.43	10.45	17.45	105.26	63.04
		1915–16	18.90	11.00	29.90	34.00	52.20	40.44	32.35	8.35	15.20	131.26	72.37
		1920–21	23.42	15.38	38.80	67.50	65.67	28.48	22.79	30.62	44.13	50.23	34.85
Aberdeen, S. Dak.:													
No. 2 drop siding	Everett, Wash.	1912–13	17.88	8.00	25.88	40.00	44.86	29.95	20.00	8.88	22.17	90.12	36.08
		1915–16	18.75	8.00	26.75	34.58	42.67	33.93	23.13	4.83	15.83	165.63	50.54
		1920–21	26.00	12.00	38.00	59.42	46.30	29.33	20.20	15.00	33.50	80.00	35.82

Digitized by Google

the month of September, 1915 to 1921.

[The prices shown are actual as determined from the records of lumber dealers at the points enumerated.]

Consuming point.	Grades and items.	Species of lumber.	September—							1921 price above 1916 price.
			1915	1916	1917	1918	1919	1920	1921	
Flint, Mich	No. 2 flooring	Southern pine	$23.00	$28.00	$37.00	$43.00	$65.00	$65.00	$40.00	$12.00
	No. 2 drop siding	do	25.00	28.00	37.00	43.00	70.00	70.00	45.00	17.00
	2 by 4, 14 and 16 feet	Northern hemlock	25.00	28.00	35.00	40.00	58.00	58.00	42.00	14.00
	8-inch No. 3 boards	Southern pine	20.00	24.00	31.00	36.00	50.00	55.00	35.00	11.00
	10-inch No. 3 boards	do	20.00	24.00	31.00	36.00	50.00	55.00	35.00	11.00
	6-inch No. 2 common S2S D. and M	do	23.00	28.00	37.00	43.00	60.00	60.00	40.00	12.00
	1 by 4 No. 1 common flooring	do	30.00	32.00	44.00	48.00	80.00	90.00	55.00	23.00
	1 by 10 No. 2 common shingles	do	25.00	28.00	38.00	43.00	58.00	65.00	42.00	14.00
New Orleans, La	No. 1 flooring	do	24.00	24.00	35.00	45.00	75.00	90.00	37.00	13.00
	B flat grain-heart flooring	do	33.00	34.00	45.00	55.00	100.00	140.00	57.00	23.00
	No. 2, 6-inch flooring	do	18.00	21.00	29.00	39.00	47.00	70.00	27.00	6.00
	No. 2 drop siding	do	19.00	22.00	30.00	40.00	48.00	71.00	28.00	6.00
	2 by 4 No. 1, 12, 14, and 16 feet	do	19.00	20.00	30.00	38.00	57.00	60.00	33.00	13.00
	6 and 8 inch No. 3 common boards	do	15.00	15.00	21.00	32.00	35.00	55.00	22.00	7.00
	10 and 12 inch common boards	do	24.00	23.00	31.00	49.00	60.00	75.00	37.00	14.00
	6-inch No. 2 common S2S C. and M	do	19.00	22.00	30.00	40.00	48.00	71.00	28.00	6.00
	1 by 4 No. 1 common flooring, flat grain	do	24.00	24.00	35.00	45.00	75.00	90.00	37.00	13.00
Waupaca, Wis	B flat grain flooring	do	50.00	60.00	60.00	78.00	90.00	130.00	80.00	20.00
	No. 2 flooring	Clear flooring	35.00	40.00	50.00	65.00	95.00	140.00	50.00	10.00
	No. 1 drop siding	No. 1 hemlock and common pine	25.00	24.00	34.00	40.00	50.00	68.00	35.00	11.00
	No. 1, 2 by 4, 12, 14, and 16 feet	Hemlock	23.00	26.00	37.00	38.00	50.00	68.00	35.00	9.00
	8-inch common boards	Southern pine	40.00	45.00	48.00	50.00	60.00	90.00	65.00	20.00
	10-inch common boards	Common pine	40.00	46.00	48.00	50.00	60.00	90.00	65.00	19.00
St. Louis, Mo	B flat-grain flooring	Southern pine	25.50	25.00	48.00	48.00	90.00	78.00	59.75	34.75
	No. 2 flooring	Fir	45.00	48.00	55.00	65.25	92.25	101.50	85.50	37.50
	B drop siding	do	29.00	30.00	30.50	50.00	82.50	73.50	54.75	24.75
	No. 1 S. and E. 2 by 4 by 16 foot	do	22.00	20.50	35.50	37.50	58.25	43.00	39.75	19.25
	8-inch common boards, No. 2	do	20.50	19.50	33.00	39.25	55.50	46.25	35.75	16.25
	10-inch No. 2 common boards	do	20.50	19.50	33.00	39.25	55.50	46.25	35.75	16.25
	No. 1, 6-inch common S2S C. and M	do	19.00	25.00	36.50	46.75	64.75	72.50	41.25	16.25
	No. 1, 1 by 4 common flooring, flat grain	do	23.00	30.00	34.50	49.50	67.00	79.25	46.50	16.50
	No. 2, 1 by 10 common ship-lap	do	20.50	19.50	33.00	39.25	55.50	55.50	35.75	16.25
Logan, Utah	No. 2 flooring	do	42.50	42.50	55.00	67.00	100.00	111.00	75.00	32.50
	No. 3, 1 by 6 drop siding	do	33.50	33.50	50.00	60.00	80.00	94.50	45.00	11.50
	2 by 4 by 12, 14, and 16 foot	do	25.00	25.00	36.00	40.00	54.00	54.00	35.00	10.00
	8-inch common boards	do	26.00	26.00	36.00	40.00	54.00	56.50	36.00	10.00

Digitized by Google

TABLE A129.—*Statement showing a history of the retail prices of specified grades and items of lumber at typical consuming points as of the month of September, 1915 to 1921*—Continued.

Consuming point.	Grades and items.	Species of lumber.	September—							1921 price above 1916 price.
			1915	1916	1917	1918	1919	1920	1921	
Logan, Utah	10-inch common boards	Fir	$27.00	$26.00	$36.00	$42.00	$54.00	$56.50	$36.00	$10.00
	No. 2, 6-inch common S2S C. and M	do					45.00	45.00	30.00	
	No. 1, 1 by 10 common ship-lap	do	28.00	28.00	37.50	43.00	58.00	60.00	37.00	9.00
Plymouth, Nebr	No. 2 flooring	Southern pine		43.00	50.00	70.00	90.00	160.00	90.00	47.00
	do	Fir		38.00	45.00	55.00	75.00	120.00	60.00	22.00
	No. 2 or No. 3 drop siding	Southern pine		38.00	50.00	60.00	70.00	80.00	60.00	22.00
	2 by 4 by 12, 14 and 16 foot	Fir		30.00	37.00	44.00	60.00	70.00	43.00	13.00
	8-inch common boards	Fir or southern pine		30.00	40.00	50.00	60.00	70.00	50.00	20.00
	6-inch No. 2 common S2S C. and M			30.00	37.00	42.00	50.00	65.00	45.00	15.00
	No. 1 common flooring 1 by 4, flat grain			45.00	50.00	60.00	85.00	130.00	70.00	25.00
	No. 2, 1 by 10 common ship-lap			32.00	37.00	45.00	55.00	65.00	45.00	13.00
Aberdeen, S. Dak	No. 2 clear and Btr. flooring, F. G	Fir	36.00	38.00	40.00	53.00	100.00	75.00	55.00	17.00
	No. 2 clear and Btr. flooring, V. G	do	41.50	42.50	50.00	65.00	125.00	105.00	90.00	47.50
	No. 2 clear and Btr. drop siding	do	34.00	35.00	42.00	50.00	95.00	70.00	53.00	18.00
	2 by 4 by 12, 14 and 16 foot	do	24.00	25.00	30.00	35.00	65.00	45.00	37.00	12.00
	8-inch common boards	do	30.00	30.00	31.00	38.00	65.00	46.00	36.00	6.00
	10-inch common boards	do	30.00	30.00	32.00	37.00	66.00	46.00	36.00	6.00

Digitized by Google

consuming destinations.

Grade.	Point of origin.	Point of destination.	Period.	Average price f. o. b. point of shipment per 1,000 in car lots.	Total freight charges per 1,000 shingles.	Average price to retailer at destination.	Average retail price paid by consumer.	Percentage freight cost to price paid.		
								To producer.	By retailer.	By consumer.
Clears	Washington	Nebraska	1912–13	$2.17	$1.62	$3.89	$4.88	70	42	33
			1915–16	1.89	1.62	3.44	4.69	89	47	35
			1920–21	2.66	2.27	4.93	5.88	85	46	39
Cypress "Best"	Louisiana	do	1912–13	3.46	.75	4.21	[1] 5.47	22	18	14
			1915–16	3.24	.75	3.99	[1] 5.19	23	19	14
			1920–21	6.56	1.28	8.84	[1] 11.93	19	14	10
Ex Star, A Star	Washington	Texas	1912–13	1.70	1.31	3.01	[1] 3.91	77	44	34
			1915–16	1.44	1.31	2.75	[1] 3.58	90	48	37
			1920–21	2.24	1.30	4.10	[1] 5.54	83	45	34
Cypress "Best"	Louisiana	do	1912–13	3.46	.66	4.12	[1] 5.36	19	16	12
			1915–16	3.24	.66	3.90	[1] 5.07	20	17	13
			1920–21	6.56	1.10	7.66	[1] 10.34	17	14	10
Clears	Washington	Washington	1912–13	2.17	.25	2.42	[1] 3.15	12	10	8
			1915–16	1.82	.25	2.07	[1] 2.69	14	12	9
			1920–21	2.66	.40	3.06	[1] 4.13	15	12	10
Ex Star, A Star	do	California	1912–13	1.70	.64	2.34	[1] 3.04	38	27	21
			1915–16	1.44	.64	2.08	[1] 2.70	44	30	24
			1920–21	2.24	.90	3.14	[1] 4.24	40	29	21

[1] Estimated; 1912–13, price 30 per cent above price to retailer; 1915–16, price 30 per cent above price to retailer; 1920–21, price 35 per cent above price to retailer.

Digitized by Google

TABLE B4.—*Population of the United States.*

States and groups.	Area, 1920, square miles.	1920	1910	1900	1890	1880	1870	1860	1850	1840	1830
Maine	33,040	768,014	742,371	694,466	661,086	648,936	626,915	628,279	583,169	501,793	399,455
New Hampshire	9,305	443,083	430,572	411,588	376,530	346,991	318,300	326,073	317,976	284,574	269,328
Vermont	9,565	352,428	355,956	343,641	332,422	332,286	330,551	315,098	314,120	291,948	280,652
Massachusetts	8,315	3,852,356	3,366,416	2,805,346	2,238,947	1,783,085	1,457,351	1,231,066	994,514	737,699	610,408
Rhode Island	1,250	604,397	542,610	428,556	345,506	276,531	217,353	174,620	147,545	108,830	97,199
Connecticut	4,990	1,380,631	1,114,756	908,420	746,258	622,700	537,454	460,147	370,792	309,978	297,675
New England group	66,465	7,400,909	6,552,681	5,592,017	4,700,749	4,010,529	3,487,924	3,135,283	2,728,116	2,234,822	1,954,717
New York	49,170	10,385,227	9,113,614	7,268,894	6,003,174	5,082,871	4,382,759	3,880,735	3,097,394	2,428,921	1,918,608
New Jersey	7,815	3,155,900	2,537,167	1,883,669	1,444,933	1,131,116	906,096	672,035	489,555	373,306	320,823
Pennsylvania	45,215	8,720,017	7,665,111	6,302,115	5,258,113	4,282,891	3,521,951	2,906,215	2,311,786	1,724,033	1,348,233
Delaware	2,050	223,003	202,322	184,735	168,493	146,608	125,015	112,216	91,532	78,085	76,748
Maryland	12,210	1,449,661	1,295,346	1,188,044	1,042,390	934,943	780,894	687,049	583,034	470,019	447,040
District of Columbia	70	437,571	331,069	278,718	230,392	177,624	131,700	75,080	51,687	43,712	39,834
Middle Atlantic group	116,530	24,371,379	21,144,629	17,106,175	14,147,495	11,756,053	9,848,415	8,333,330	6,624,988	5,118,076	4,151,286
Ohio	41,060	5,759,394	4,767,121	4,157,545	3,672,329	3,198,062	2,665,260	2,339,511	1,980,329	1,519,467	937,903
Michigan	58,915	3,668,412	2,810,173	2,420,982	2,093,890	1,636,937	1,184,059	749,113	397,654	212,267	31,639
Indiana	36,350	2,930,390	2,700,876	2,516,462	2,192,404	1,978,301	1,680,637	1,350,428	988,416	685,066	343,031
Illinois	56,650	6,485,280	5,638,591	4,821,550	3,826,352	3,077,871	2,539,891	1,711,951	851,470	476,183	157,445
Wisconsin	56,040	2,632,067	2,333,860	2,069,042	1,693,330	1,315,497	1,054,670	775,881	305,391	30,945	.....
Central Northern group	249,015	21,475,543	18,250,621	15,985,581	13,478,305	11,206,668	9,124,517	6,926,884	4,523,260	2,924,728	1,470,018
Virginia	42,450	2,309,187	2,061,612	1,854,184	1,655,980	1,512,565	1,225,163	1,596,318	1,421,661	1,239,797	1,211,405
West Virginia	24,780	1,463,701	1,221,119	958,800	762,794	618,457	442,014	.....	.....	.....	.....
North Carolina	52,250	2,559,123	2,206,287	1,893,810	1,617,949	1,399,750	1,071,361	992,622	869,039	753,419	737,987
South Carolina	30,570	1,683,724	1,515,400	1,340,316	1,151,149	995,577	705,606	703,708	668,507	594,398	581,185
Georgia	59,475	2,895,832	2,609,121	2,216,331	1,837,353	1,542,180	1,184,109	1,057,286	906,185	691,392	516,823
Florida	58,680	968,470	752,619	528,542	391,422	269,493	187,748	140,424	87,445	54,477	34,730
South Atlantic group	268,205	11,880,037	10,366,158	8,791,983	7,416,647	6,338,022	4,816,001	4,490,358	3,952,837	3,333,483	3,082,130
Kentucky	40,400	2,416,630	2,289,905	2,147,174	1,858,635	1,648,690	1,321,011	1,155,684	982,405	779,828	687,917
Tennessee	42,050	2,337,885	2,184,789	2,020,616	1,767,518	1,542,359	1,258,520	1,109,801	1,002,717	829,210	681,904
Alabama	52,250	2,348,174	2,138,093	1,828,697	1,513,401	1,262,505	996,992	964,201	771,623	590,756	309,527
Mississippi	46,810	1,790,618	1,797,114	1,551,270	1,289,600	1,131,597	827,922	791,305	606,526	375,651	136,621
Louisiana	48,720	1,798,509	1,656,388	1,381,625	1,118,588	939,946	726,915	708,002	517,762	352,411	215,739
Gulf and Mississippi Valley group	230,230	10,691,816	10,066,289	8,929,382	7,547,742	6,525,097	5,131,350	4,729,193	3,881,033	2,927,856	2,031,708

Digitized by Google

Arkansas	59,850	1,752,204	1,573,449	1,311,504	1,128,211	802,525	484,471	435,450	209,897	97,574	30,388
Indian County	31,400	2,028,263	1,657,155	790,391	258,657						
Oklahoma Territory	39,030										
Texas	235,780	4,663,228	3,896,542	3,048,710	2,235,527	1,591,749	818,579	604,215	212,592		
Kansas	82,080	1,769,257	1,690,949	1,470,495	1,428,108	996,096	364,399	107,206			
Colorado	103,925	989,629	799,024	539,700	413,249	194,327	39,864	34,277			
New Mexico	122,580	360,350	327,301	195,310	160,282	119,565	91,874	93,516	61,547		
Southwestern group	768,060	14,917,006	13,238,755	10,462,835	8,303,219	5,872,642	3,520,482	2,456,676	1,166,080	481,276	170,843
Iowa	56,025	2,404,021	2,224,771	2,231,853	1,912,297	1,624,615	1,194,020	674,913	192,214	43,112	
Minnesota	83,365	2,387,125	2,075,708	1,751,394	1,310,283	780,773	439,706	172,023	6,077		
Nebraska	77,510	1,296,372	1,192,214	1,066,300	1,032,656	452,402	122,993	28,841			
North Dakota	70,795	646,872	577,056	319,146	190,983						
South Dakota	77,650	636,547	583,888	401,570	348,600	135,177	14,181	4,837			
Wyoming	97,890	194,402	145,965	92,531	62,555	20,789	9,118				
Montana	146,080	548,889	376,053	243,329	142,924	39,159	20,595				
Northwestern group	609,315	8,114,228	7,175,655	6,106,123	5,030,298	3,052,915	1,800,613	880,614	198,291	43,112	
Washington	69,180	1,356,621	1,141,990	518,103	357,232	75,116	23,955	11,594			
Idaho	84,800	431,866	325,594	161,772	88,548	32,610	14,999				
Oregon	96,030	783,389	672,765	413,536	317,704	174,768	90,923	52,465	13,294		
California	158,360	3,426,861	2,377,549	1,485,053	1,213,398	864,694	560,247	379,994	92,597		
Nevada	110,700	77,407	81,875	42,335	47,355	62,266	42,491	6,857			
Arizona	113,020	334,162	204,354	122,931	88,243	40,440	9,658				
Utah	84,970	449,396	373,351	276,749	210,779	143,963	86,786	40,273	11,380		
Pacific group	717,060	6,859,702	5,177,478	3,020,479	2,323,259	1,393,857	829,059	491,183	117,271		
Total States	3,024,890	105,710,620	91,972,266	75,994,575	62,947,714	50,155,783	38,558,371	31,443,321	23,191,876	17,063,353	12,866,020
Population per square mile of area		34.95	30.41	25.12	20.80	16.58	12.75	10.39	7.67	5.64	4.25
Population per mile of railroad		416.8	382.5	393.0	384.8	537.6	728.6	1,026.7	2,570.9	6,055.1	

Digitized by Google

TABLE B5.—*Mileage of railroads by States.*

States and groups.	Area.	1919	1918	1917	1916	1915	1914	1913	1912	1911
	Square miles.									
Maine	33,040	2,294	2,269	2,270	2,263	2,276	2,270	2,271	2,253	2,278
New Hampshire	9,305	1,255	1,253	1,253	1,252	1,256	1,256	1,526	1,246	1,246
Vermont	9,565	1,077	1,081	1,056	1,073	1,073	1,072	1,073	1,075	1,072
Massachusetts	8,315	2,126	2,126	2,135	2,133	2,131	2,130	2,130	2,114	2,115
Rhode Island	1,250	212	212	206	203	203	206	204	204	212
Connecticut	4,990	1,022	999	999	1,000	999	999	1,001	1,001	1,001
New England group	66,465	7,986	7,940	7,919	7,924	7,938	7,934	7,935	7,893	7,924
New York	49,170	8,353	8,389	8,434	8,493	8,534	8,530	8,511	8,501	8,475
New Jersey	7,815	2,351	2,352	2,344	2,338	2,315	2,313	2,310	2,306	2,267
Pennsylvania	45,215	11,658	11,657	11,681	11,635	11,693	11,634	11,508	11,460	11,341
Delaware	2,050	335	335	335	335	335	335	335	344	335
Maryland	12,210	1,440	1,440	1,426	1,428	1,434	1,430	1,413	1,436	1,434
District of Columbia	70	36	36	37	37	36	36	36	36	36
Middle Atlantic group	116,530	24,173	24,209	24,257	24,666	24,347	24,278	24,113	24,083	23,888
Ohio	41,060	9,003	9,012	9,044	9,121	9,159	9,148	9,117	9,122	9,128
Michigan	58,915	8,770	8,888	8,928	8,876	8,862	8,934	8,998	8,921	8,943
Indiana	36,350	7,412	7,411	7,426	7,476	7,479	7,476	7,461	7,444	7,447
Illinois	56,650	12,123	12,126	12,133	12,142	12,157	12,140	12,013	11,976	11,980
Wisconsin	56,040	7,561	7,609	7,668	7,694	7,638	7,611	7,637	7,589	7,399
Central northern group	249,015	44,869	45,046	45,206	45,309	45,295	45,309	45,246	45,052	44,897
Virginia	42,450	4,749	4,694	4,677	4,799	4,729	4,611	4,603	4,601	4,589
West Virginia	24,780	3,983	3,994	4,013	3,974	3,910	3,915	3,818	3,795	3,575
North Carolina	52,250	5,505	5,470	5,462	5,537	5,565	5,419	5,205	5,172	5,072
South Carolina	30,170	3,827	3,804	3,697	3,724	3,690	3,687	3,618	3,553	3,509
Georgia	59,475	7,338	7,435	7,464	7,482	7,427	7,432	7,404	7,250	7,174
Florida	58,980	5,221	5,222	5,249	5,280	5,253	5,120	4,908	4,808	4,556
South Atlantic group	268,205	30,623	30,620	30,592	30,796	30,673	30,184	29,644	29,179	28,467
Kentucky	40,400	3,903	3,872	3,859	3,836	3,802	3,780	3,754	3,609	3,607
Tennessee	42,050	4,108	4,063	4,076	4,091	4,101	4,106	3,900	3,979	3,881
Alabama	52,250	5,377	5,413	5,420	5,426	5,424	5,406	5,396	5,304	5,250
Mississippi	46,810	4,366	4,448	4,447	4,480	4,470	4,441	4,485	4,426	4,450
Louisiana	48,780	5,281	5,277	5,363	5,003	5,726	5,720	5,677	5,686	5,657
Gulf and Mississippi Valley group	280,280	23,015	23,073	23,165	23,466	23,526	23,453	23,302	23,004	22,853

Digitized by Google

Oklahoma	39,030	6,537	6,528	6,502	6,454	6,405	6,398	6,357	6,160	6,076
Texas	265,780	16,113	16,085	15,932	15,867	15,831	15,758	15,608	15,322	14,777
Kansas	82,090	9,385	9,388	9,396	9,346	9,291	9,257	9,137	9,137	9,090
Colorado	103,025	5,582	5,615	5,640	5,702	5,724	5,739	5,710	5,727	5,587
New Mexico	122,590	2,974	2,978	2,974	3,040	3,033	3,025	3,039	3,046	3,033
Southwestern group	768,060	53,813	53,946	53,882	53,972	53,941	53,736	53,447	52,799	51,964
Iowa	58,025	9,809	9,807	9,828	9,946	9,978	9,904	9,916	9,890	9,856
Minnesota	83,365	9,097	9,143	9,162	9,153	9,060	9,040	9,096	8,986	8,932
Nebraska	77,510	6,166	6,167	6,167	6,169	6,171	6,171	6,142	6,133	6,066
North Dakota	70,795	5,311	5,313	5,316	5,275	5,226	5,160	5,033	4,309	4,450
South Dakota	77,650	4,277	4,278	4,279	4,249	4,278	4,238	4,206	4,206	4,193
Wyoming	97,390	1,690	1,691	1,694	1,698	1,691	1,691	1,690	1,673	1,644
Montana	146,080	5,032	5,037	4,954	4,848	4,844	4,847	4,497	4,358	4,326
Northwestern group	609,315	41,692	41,676	41,640	41,576	41,448	41,271	40,580	33,762	39,467
Washington	69,130	5,546	5,612	5,650	5,698	5,560	5,247	5,290	5,179	5,288
Idaho	84,860	2,947	2,894	2,861	2,893	2,793	2,749	2,644	2,556	2,458
Oregon	96,030	3,315	3,298	3,232	3,067	3,115	2,912	2,774	2,686	2,057
California	158,360	8,393	8,368	8,189	8,440	8,451	8,362	8,183	8,105	7,885
Nevada	110,700	2,177	2,206	2,203	2,178	2,232	2,418	2,341	2,336	2,299
Arizona	113,090	2,403	2,424	2,424	2,410	2,390	2,273	2,283	2,156	2,123
Utah	84,970	2,175	2,161	2,143	2,127	2,111	2,092	2,092	2,029	1,999
Pacific group	717,060	27,051	26,993	26,964	26,943	26,721	26,065	25,618	25,047	24,709
Total States	3,024,890	253,152	253,528	253,625	254,251	253,789	252,230	249,805	246,819	244,179
Square mile of area to 1 mile of railroad, or 1 mile of railroad to square miles of area		11.95	11.93	11.93	11.90	11.92	11.99	13.11	13.26	12.39

Digitized by Google

TABLE B5.—*Mileage of railroads by States*—Continued.

States and groups.	1910	1900	1890	1880	1870	1860	1850	1840	1835	1830
Maine	2,248	1,915	1,338	1,005	786	472	245	11	.....	.....
New Hampshire	1,246	1,239	1,145	1,015	736	661	467	53	.....	.....
Vermont	1,100	1,012	921	914	614	554	290	.....	.....	.....
Massachusetts	2,115	2,119	2,094	1,915	1,480	1,264	1,035	311	113	.....
Rhode Island	212	211	213	210	136	108	68	50	.....	.....
Connecticut	1,000	1,024	1,007	923	742	601	402	102	.....	.....
New England group	7,921	7,520	6,718	5,982	4,494	3,660	2,507	527	113	.....
New York	8,430	8,121	7,661	5,957	3,928	2,682	1,361	374	104	.....
New Jersey	2,260	2,257	2,047	1,684	1,125	560	206	186	99	.....
Pennsylvania	11,290	10,331	8,453	6,191	4,655	2,598	1,240	754	318	.....
Delaware	335	347	323	275	197	127	39	39	16	.....
Maryland	1,426	1,376	1,231	1,040	671	386	259	213	117	.....
District of Columbia	36	32	30	.....	.....	.....	.....	.....	.....	.....
Middle Atlantic group	22,777	22,464	19,745	15,147	10,577	6,353	3,105	1,566	654	23
Ohio	9,134	8,807	7,911	5,792	3,538	2,946	575	30	.....	.....
Michigan	9,021	8,195	7,243	3,938	1,638	779	342	59	.....	.....
Indiana	7,420	6,471	5,971	4,373	3,177	2,163	228	.....	.....	.....
Illinois	11,878	11,003	10,214	7,851	7,823	2,790	111	.....	.....	.....
Wisconsin	7,475	6,531	5,584	3,155	1,525	905	20	.....	.....	.....
Central northern group	44,928	41,007	36,923	25,109	14,701	9,583	1,276	89	.....	.....
Virginia	4,535	3,779	3,160	1,893	1,486	1,379	384	147	93	.....
West Virginia	3,601	2,228	1,328	691	387	352	97	.....	.....	.....
North Carolina	4,932	3,831	3,001	1,486	1,178	937	283	53	.....	.....
South Carolina	3,442	2,818	2,194	1,427	1,139	973	289	137	137	.....
Georgia	7,056	5,652	4,532	2,459	1,845	1,420	643	185	.....	.....
Florida	4,432	3,299	2,471	518	446	402	21	.....	.....	.....
South Atlantic group	27,998	21,607	16,686	8,474	6,481	5,463	1,717	522	230	.....
Kentucky	3,826	3,060	2,746	1,530	1,017	534	78	28	15	.....
Tennessee	3,816	3,137	2,752	1,843	1,492	1,253	.....	.....	.....	.....
Alabama	5,236	4,225	3,314	1,843	1,157	743	183	46	46	.....
Mississippi	4,506	2,920	2,382	1,127	990	862	75	.....	.....	.....
Louisiana	5,554	2,824	1,759	652	450	335	80	40	40	.....
Gulf and Mississippi Valley group	23,632	16,166	12,903	6,995	5,106	3,727	416	114	101	.....

Digitized by Google

Indian County		1,323	1,046							
Oklahoma	5,960	828	168	289						
Texas	14,282	9,886	8,613	3,244	711	307				
Kansas	9,007	8,719	8,806	3,400	1,501					
Colorado	5,533	4,587	4,176	1,570	157					
New Mexico	3,032	1,753	1,324	758						
Southwestern group	51,223	37,331	32,333	14,085	4,625	1,162				
Iowa	9,755	9,185	8,366	5,400	2,683	655				
Minnesota	8,669	6,943	5,466	3,151	1,092					
Nebraska	6,067	5,685	5,295	1,953	705					
North Dakota	4,201	2,731	1,941							
South Dakota	3,948	2,850	2,486	1,225	65					
Wyoming	1,645	1,229	942	512	459					
Montana	4,207	3,010	2,181	106						
Northwestern group	38,492	31,633	26,677	12,347	5,004	655				
Washington	4,875	2,914	1,783	289						
Idaho	2,179	1,261	941	206						
Oregon	2,285	1,724	1,428	508	159					
California	7,772	5,751	4,356	2,195	925	23				
Nevada	2,277	909	925	739	593					
Arizona	2,097	1,512	1,097	349						
Utah	1,986	1,547	1,090	842	257					
Pacific group	23,471	15,618	11,620	5,128	1,934	23				
Total States	240,438	198,346	163,605	93,267	52,922	30,626	9,021	2,818	1,098	23
Square mile of area to 1 mile of railroad, or 1 mile of railroad to square miles of area	12.58	15.64	18.49	32.42	57.16	98.77	335.32	1,073.41	2,754.90	131,516.50

The mileage in this table is not strictly comparable with mileage reported in table B6 and B7 due to the inclusion of estimated mileage of intrastate nonreporting roads.

Digitized by Google

TABLE B9.—*Locomotives, passenger-train cars, and company service cars in service of Class I railroads—1911 to 1920.*

[Excludes switching and terminal companies.]

	Fiscal year ended June 30—					
	1911	1912	1913	1914	1915	1916
Locomotives in service as of end of year:						
Steam	(1)	(1)	(1)	(1)	61,883	60,790
Other	(1)	(1)	(1)	(1)	243	267
Total	58,071	59,010	61,172	62,533	62,126	61,057
Total locomotives installed during the year	3,604	2,861	4,381	3,245	1,114	1,475
Total locomotives retired during the year	1,468	1,858	2,338	1,862	1,507	2,576
Aggregate tractive power of steam locomotives (pounds)	[2] 1,624,983,414	[3] 1,687,511,260	[4] 1,802,662,961	[5] 1,886,549,568	1,970,295,300	1,989,132,700
Average tractive power per steam locomotive (pounds)	28,305	28,987	29,966	30,705	31,840	32,721
Passenger-train cars in service as of end of year:						
Coaches	25,613	26,405	26,901	27,482	28,481	27,949
Combination passenger cars[6]	4,873	4,951	5,012	5,134	4,999	4,864
Other combination cars[6]					2,849	3,014
Emigrant cars	78	89	92	84	50	42
Dining cars	1,054	1,129	1,206	1,279	1,368	1,335
Parlor cars	687	677	536	546	627	619
Sleeping cars	655	666	633	632	745	748
Baggage and express[6]	11,959	12,459	12,713	13,370	9,736	9,505
Postal[6]					1,553	1,444
Other passenger-train cars	1,986	2,161	2,567	2,846	2,282	2,150
Total passenger-train cars	46,905	48,537	49,060	51,373	52,690	51,670
Passenger-train cars installed during the year	4,250	3,060	2,823	3,629	2,664	1,261
Passenger-train cars retired during the year	1,701	1,387	1,842	1,854	1,385	2,156
Passenger-train cars of steel construction:						
Coaches	(1)	(1)	(1)	(1)	6,088	6,394
Combination passenger cars	(1)	(1)	(1)	(1)	812	892
Other combination cars	(1)	(1)	(1)	(1)	566	759
Emigrant cars	(1)	(1)	(1)	(1)		
Dining cars	(1)	(1)	(1)	(1)	384	400
Parlor cars	(1)	(1)	(1)	(1)	122	128
Sleeping cars		(1)	(1)	(1)	178	189
Baggage and express		(1)	(1)	(1)	1,714	1,741
Postal		(1)	(1)	(1)	807	874
Other passenger cars		(1)	(1)	(1)	128	120
Total passenger-train cars		(1)	(1)	(1)	10,849	11,497

Digitized by Google

Coaches	(1)	(1)	(1)	(1)	1,983	1,797
Combination passenger cars	(1)	(1)	(1)	(1)	327	251
Other combination cars	(1)	(1)	(1)	(1)	298	301
Emigrant cars	(1)	(1)	(1)	(1)		
Dining cars	(1)	(1)	(1)	(1)	205	242
Parlor cars	(1)	(1)	(1)	(1)	44	55
Sleeping cars	(1)	(1)	(1)	(1)	6	14
Baggage and express	(1)	(1)	(1)	(1)	1,362	931
Postal	(1)	(1)	(1)	(1)	191	182
Other passenger-train cars	(1)	(1)	(1)	(1)	738	773
Total passenger-train cars	(1)	(1)	(1)	(1)	5,160	4,546
Company service cars in service as of end of year:						
Officers' and pay cars	735	731	765	800	811	842
Ballast cars	26,656	25,166	25,880	26,270	26,979	26,106
Derrick cars	1,630	1,687	1,767	1,822	1,808	1,484
Steam shovels					557	864
Wrecking cars	53,982	57,033	61,214	64,255	2,647	2,387
Other company service cars					60,722	62,642
Total company service cars	83,003	84,617	89,626	93,147	93,224	94,026
Company service cars installed during the year	12,931	10,630	13,014	12,854	10,228	13,086
Company service cars retired during the year	6,921	8,800	8,507	8,159	11,787	13,446

[1] Not available.
[2] Represents tractive power of 57,409 locomotives.
[3] Represents tractive power of 58,216 locomotives.
[4] Represents tractive power of 60,177 locomotives.
[5] Represents tractive power of 61,442 locomotives.
[6] Baggage, express, and postal cars for the years 1911 to 1914, inclusive, includes a few combination cars reported in subsequent years as "Other combination cars."

Digitized by Google

	Calendar year ended Dec. 31—				
	1916	1917	1918	1919	1920
Locomotives in service as of end of year:					
Steam	[7] 61,013	[8] 61,548	[8] 63,546	[8] 64,633	64,366
Other	319	342	343	350	366
Total	61,332	61,890	63,889	64,983	64,732
Total locomotives installed during the year	(1)	2,148	2,803	2,062	2,048
Total locomotives retired during the year	(1)	1,423	977	999	1,226
Aggregate tractive power of steam locomotives (pounds)	2,024,118,700	2,087,949,700	2,223,246,296	2,312,633,581	2,337,312,896
Average tractive power per steam locomotive (pounds)	33,188	33,932	34,395	35,789	36,313
Passenger-train cars in service as of end of year:					
Coaches	28,009	27,896	28,264	28,128	(1)
Combination passenger cars [6]	4,873	4,837	4,851	4,845	(1)
Other combination cars [6]	2,988	2,945	3,051	2,986	(1)
Emigrant cars	13	11	11	11	(1)
Dining cars	1,374	1,376	1,351	1,349	(1)
Parlor cars	624	623	574	565	(1)
Sleeping cars	755	567	562	562	(1)
Baggage and express [6]	10,007	11,231	11,788	11,795	(1)
Postal [6]	1,390	1,324	1,277	1,349	(1)
Other passenger-train cars	2,146	2,167	2,212	2,175	(1)
Total passenger-train cars	52,179	52,977	53,941	53,765	53,508
Passenger-train cars installed during the year	(1)	2,535	1,817	435	785
Passenger-train cars retired during the year	(1)	1,671	1,051	670	758
Passenger-train cars of steel construction:					
Coaches	6,716	7,253	7,580	7,675	(1)
Combination passenger cars	972	1,066	1,105	1,118	(1)
Other combination cars	779	822	909	908	(1)
Emigrant cars					(1)
Dining cars	443	482	503	502	(1)
Parlor cars	128	137	145	147	(1)
Sleeping cars	189	175	173	173	(1)
Baggage and express	2,160	2,904	3,342	3,333	(1)
Postal	896	922	965	900	(1)
Other passenger cars	78	86	85	84	(1)
Total passenger-train cars	12,361	13,847	14,807	14,930	(1)

Digitized by Google

Passenger-train cars of steel underframe construction:					
Coaches	1,899	2,027	2,098	2,168	(1)
Combination passenger cars	273	312	309	324	(1)
Other combination cars	305	344	353	363	(1)
Emigrant cars				1	(1)
Dining cars	257	278	294	305	(1)
Parlor cars	60	63	69	69	(1)
Sleeping cars	13	30	29	29	(1)
Baggage and express	1,143	1,552	1,927	1,984	(1)
Postal	198	196	164	175	(1)
Other passenger-train cars	868	896	931	946	(1)
Total passenger-train cars	5,016	5,698	6,174	6,364	(1)
Company service cars in service as of end of year:					
Officers' and pay cars	890	901	891	888	(1)
Ballast cars	25,644	24,793	21,807	23,263	(1)
Derrick cars	1,492	1,522	1,532	1,593	(1)
Steam shovel	566	561	558	556	(1)
Wrecking cars	2,706	2,787	2,803	2,856	(1)
Other company service cars	65,899	69,312	73,884	74,450	(1)
Total company service cars	97,197	99,876	101,475	103,606	(1)
Company service cars installed during the year	(1)	9,445	9,310	5,925	(1)
Company service cars retired during the year	(1)	6,627	5,530	4,190	(1)

[1] Not available.
[6] Baggage, express, and postal cars for the years 1911 to 1914, inclusive, includes a few combination cars reported in subsequent years as "Other combinaiton cars."
[7] Includes 23 steam locomotives for which tractive power is not reported.
[8] Includes 15 steam locomotives for which tractive power is not reported.

NOTE.—The number of cars "installed" and "retired" during each year will not balance to the number of cars in service, due to the slight change in the composition of Class I railroads.

Digitized by Google

TABLE B10.—*Passenger train cars owned and operated by the railroads.*

Year ended.	Coaches.	Combination passenger cars.	Other combination cars.	Baggage and express cars.	Postal cars.	Emigrant cars.	Dining cars.	Parlor cars.	Sleeping cars.	Other.	Total.
1870–4 [1]											10,768
1880–5	12,789			4,786							17,575
1890 [1]											26,820
1900	20,096	4,399		7,964		225	353	499	393	784	34,713
June 30—											
1902	21,109	4,794		8,469		242	460	587	398	923	36,987
1903	21,692	4,857		8,945		222	537	534	421	952	38,710
1904	22,456	5,072		9,345		238	617	559	410	1,055	39,752
1905	22,706	5,335		9,450		172	659	638	470	1,283	40,713
1906	23,492	5,432		9,892		186	711	703	489	1,357	42,262
1907	24,214	5,569		10,379		177	803	656	541	1,634	44,973
1908	24,772	5,609		10,864		166	832	659	500	1,990	45,292
1909	25,241	5,581		10,997		138	844	684	420	1,679	45,584
1910	25,881	5,697		11,524		97	950	634	490	1,822	47,095
1911	27,158	5,710		12,269		78	1,057	703	662	2,181	49,818
1912	27,961	5,806		12,766		89	1,133	699	673	2,363	51,490
1913	28,075	5,802		12,943		96	1,209	647	637	2,692	51,700
1914	28,709	5,639		13,607		84	1,282	561	636	2,948	53,406
1915	30,055	5,841	2,984	9,938	1,566	80	1,371	661	760	2,499	55,706
1916	29,533	5,683	3,140	9,706	1,453	42	1,338	646	758	2,363	54,664
Dec. 31—											
1916	29,552	5,664	3,101	10,202	1,400	13	1,377	650	764	2,358	55,081
1917	29,372	5,623	2,949	11,434	1,336	11	1,377	648	572	2,401	55,823
1918	29,607	5,601	3,148	11,978	1,285	11	1,352	598	566	2,359	56,505
1919	29,388	5,558	3,083	11,961	1,354	11	1,350	581	565	2,332	56,183
1920 [1]											[2] 53,508

[1] Not segregated to classes.

[2] Class I railroads only.

Digitized by Google

TABLE 511.—*Freight cars owned and operated by the railroads.*

Year.	Box cars.			Flat cars.			Stock cars.			Coal cars.		
	Number in service.	Per cent—		Number in service.	Per cent—		Number in service.	Per cent—		Number in service.	Per cent—	
		Of total.	Increase over 1902.		Of total.	Increase over 1902.		Of total.	Increase over 1902.		Of total.	Increase over 1902.
1900	657,053	48.11	.....	134,594	9.85	.....	55,152	4.03	.....	454,535	33.28	.....
Year ended June 30:												
1902	708,961	47.06	.....	142,303	9.44	.....	57,668	3.82	.....	534,448	35.48	.....
1903	765,890	46.39	8.03	154,074	9.33	8.27	61,790	3.74	7.14	595,963	36.10	11.51
1904	780,445	46.22	10.09	147,226	8.72	3.48	64,270	3.80	11.44	622,508	36.87	16.48
1905	802,964	46.47	13.27	146,050	8.45	2.63	62,988	3.64	9.22	632,171	36.59	18.28
1906	843,118	45.96	18.93	146,908	8.01	3.23	64,202	3.50	11.33	686,717	37.45	28.49
1907	904,821	45.55	27.64	156,860	7.89	10.22	69,997	3.52	21.37	746,670	37.59	39.70
1908	950,209	45.32	34.04	159,749	7.62	12.25	76,219	3.63	32.16	805,185	38.41	50.65
1909	941,583	45.45	32.82	154,630	7.46	8.66	73,494	3.54	27.44	792,291	38.25	48.24
1910	966,577	45.30	36.35	153,918	7.21	8.16	77,584	3.63	34.53	818,689	38.37	53.18
1911	990,313	45.11	39.70	153,300	6.98	7.72	77,590	3.53	34.54	853,699	38.88	59.73
1912	1,004,005	45.32	41.63	150,340	6.80	5.79	76,535	3.45	32.71	855,111	38.60	60.00
1913	1,032,585	45.42	45.66	147,541	6.49	3.68	78,308	3.44	35.79	871,339	38.32	63.03
1914	1,043,796	44.88	47.24	146,133	6.28	2.69	82,971	3.56	43.87	899,314	38.67	68.26
1915	1,041,080	44.72	46.85	145,191	6.23	2.02	86,312	3.70	49.67	900,780	38.70	68.54
1916	1,024,418	44.57	44.52	136,719	5.94	[1] 3.98	83,487	3.63	44.77	899,638	39.14	68.33
Year ended Dec. 31:												
1916	1,031,864	44.89	45.56	133,553	5.77	[1] 6.15	83,931	3.62	45.54	908,539	39.26	69.99
1917	1,040,818	45.21	46.82	114,234	4.96	[1] 19.73	85,188	3.70	47.72	916,219	39.80	71.43
1918	1,038,751	44.66	46.53	111,297	4.78	[1] 21.79	87,261	3.75	51.31	927,547	39.88	73.55
1919	1,059,296	44.86	49.43	109,367	4.65	[1] 22.90	84,556	3.58	46.62	949,931	40.23	77.74
1920	1,048,762	45.04	47.95	104,983	4.52	[1] 26.23	80,774	3.47	40.06	932,986	40.18	74.57

[1] Decrease.

Digitized by Google

TABLE B11—*Freight cars owned and operated by the railroads*—Continued.

Year.	Tank cars.			Refrigerator cars.			All others.			Total cars.	
	Number in service.	Per cent—		Number in service.	Per cent—		Number in service.	Per cent—		Number in service.	Per cent increase over 1902.
		Of total.	Increase over 1902.		Of total.	Increase over 1902.		Of total.	Increase over 1902.		
1870										239,783	
1880										539,255	
1890										978,231	
1900	2,805	0.21		14,480	1.06		46,911	3.43		1,365,531	
Year ended June 30:											
1902	3,533	.23		18,222	1.20		40,957	2.71		[1] 1,505,992	
1903	4,421	.26	25.13	21,454	1.29	17.73	47,093	2.85	14.98	[2] 1,650,615	9.6
1904	4,520	.26	27.99	22,735	1.34	24.76	46,577	2.75	13.72	[3] 1,688,341	12.1
1905	4,918	.28	39.20	26,844	1.55	47.31	51,685	2.99	26.19	[4] 1,727,620	14.7
1906	5,324	.29	50.69	31,782	1.73	74.41	55,584	3.04	35.71	[5] 1,833,635	21.8
1907	5,972	.30	69.03	33,617	1.69	84.48	68,080	3.42	66.22	[6] 1,986,017	31.9
1908	6,888	.32	94.96	27,930	1.33	53.27	70,054	3.34	71.04	[7] 2,096,234	39.2
1909	6,630	.32	87.65	28,204	1.36	54.77	74,556	3.59	82.03	[8] 2,071,338	37.5
1910	7,434	.34	110.41	30,918	1.44	69.67	78,411	3.67	91.44	[9] 2,133,531	41.6
1911	7,787	.35	120.40	31,786	1.44	74.43	80,856	3.68	97.41	[10] 2,195,331	45.8
1912	7,836	.35	121.79	30,693	1.38	68.43	90,219	4.07	120.27	[11] 2,215,239	47.1
1913	8,216	.36	132.55	43,389	1.90	138.11	91,911	4.04	124.40	[12] 2,273,289	50.9
1914	8,530	.36	141.43	48,886	2.10	168.28	96,017	4.12	134.42	[13] 2,325,647	54.4
1915	9,512	.40	169.23	52,443	2.25	187.80	92,294	3.96	125.34	[14] 2,327,562	54.6
1916	9,828	.42	178.03	51,746	2.25	183.97	92,427	4.02	125.66	[15] 2,298,263	52.6
Year ended Dec. 31:											
1916	9,893	.42	180.01	51,391	2.22	182.02	94,782	4.09	131.41	[16] 2,313,953	53.6
1917	9,062	.39	156.49	51,969	2.25	185.19	84,457	3.66	106.20	[17] 2,301,947	52.9
1918	9,886	.42	179.81	62,952	2.70	245.47	87,868	3.77	114.53	[18] 2,325,562	54.4
1919	9,714	.41	174.95	61,927	2.62	239.84	85,711	3.63	109.27	[18] 2,361,002	56.7
1920	10,380	.44	193.80	59,677	2.57	227.49	83,955	3.61	104.98	[18] 2,321,517	54.2
1921										2,342,160	55.5

[1] Excludes 40,109 cars in freight service for which complete returns were not secured.
[2] Excludes 3,167 cars in freight service for which complete returns were not secured.
[3] Excludes 3,853 cars in freight service for which complete returns were not secured.
[4] Excludes 3,789 cars in freight service for which complete returns were not secured.
[5] Excludes 4,279 cars in freight service for which complete returns were not secured.
[6] Excludes 5,540 cars in freight service for which complete returns were not secured.
[7] Excludes 2,268 cars in freight service for which complete returns were not secured; includes 11,067 cars Switching and Terminal companies.
[8] Excludes 2,268 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or $100,000 roads.
[9] Excludes 1,590 cars in freight service for which complete returns were not secured includes no cars of Switching and Terminal companies or $100,000 roads.
[10] Excludes 180 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or $100,000 roads.
[11] Excludes 310 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or $100,000 roads.
[12] Excludes 275 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or $100,000 roads.
[13] Includes no cars of Switching and Terminal companies or $100,000 roads.
[14] Excludes 11 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or $100,000 roads.
[15] Excludes 78 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or roads $100,000.
[16] Excludes 254 cars in freight service for which complete returns were not secured; includes no cars of Switching and Terminal companies or $100,000 roads.
[17] Class I carriers only.
[18]

Digitized by Google

TABLE B12.—*Aggregate capacity (in tons) of cars owned and operated by the railroads.*

Year.	Box cars.			Flat cars.			Stock cars.			Coal cars.		
	Capacity of cars in service.	Per cent—		Capacity of cars in service.	Per cent—		Capacity of cars in service.	Per cent—		Capacity of cars in service.	Per cent—	
		Of total.	Increase over 1902.		Of total.	Increase over 1902.		Of total.	Increase over 1902.		Of total.	Increase over 1902.
Year ended June 30—												
1902	19,051,105	45.045	.....	3,699,304	8.746	.....	1,416,185	3.348	.....	16,432,314	38.853	.....
1903	21,209,679	43.704	11.330	4,220,847	8.697	14.098	1,559,623	3.213	10.128	19,420,603	40.012	18.182
1904	22,064,441	43.508	15.922	4,092,902	8.063	10.639	1,661,733	3.273	17.336	20,760,045	40.899	26.336
1905	23,220,055	43.601	21.883	4,141,426	7.776	11.951	1,661,097	3.119	17.293	21,712,609	40.770	32.133
1906	25,255,362	42.762	32.586	4,288,106	7.260	15.916	1,747,806	2.959	23.416	24,868,353	42.107	51.338
1907	28,179,073	42.037	47.913	4,824,170	7.196	30.407	2,013,170	3.003	42.154	28,468,524	42.469	73.247
1908	30,410,499	41.608	59.625	5,053,880	6.914	36.617	2,189,180	2.995	54.582	31,825,948	43.545	93.679
1909	30,505,607	41.709	60.125	4,945,161	6.761	33.678	2,139,105	2.924	51.047	31,748,304	43.408	93.206
1910	31,932,482	41.698	67.614	5,052,207	6.597	36.571	2,301,442	3.005	62.509	33,141,755	43.277	101.686
1911	33,246,623	41.005	74.512	5,121,944	6.317	38.456	2,352,989	2.902	66.149	35,966,635	44.361	118.877
1912	34,015,573	40.999	78.549	5,109,255	6.158	38.113	2,337,813	2.817	65.078	36,676,347	44.206	123.196
1913	35,607,134	40.938	86.903	5,151,054	5.922	39.243	2,421,827	2.784	71.010	38,314,920	44.051	133.158
1914	36,622,074	40.255	92.230	5,214,949	5.732	40.971	2,597,278	2.854	83.399	40,583,490	44.608	146.973
1915	36,978,004	40.090	94.099	5,225,995	5.665	41.269	2,759,536	2.991	94.857	41,299,973	44.775	151.663
1916	36,887,105	39.686	93.621	4,991,377	5.370	34.927	2,690,633	2.894	89.991	42,299,287	45.510	157.415
Year ended Dec. 31—												
1916	37,399,156	39.600	96.309	4,905,452	5.194	32.604	2,712,877	2.872	91.562	43,200,731	45.743	162.901
1917	38,127,110	39.937	100.130	4,377,047	4.574	17.239	2,798,279	2.931	97.592	44,252,987	46.354	169.304
1918	38,108,345	39.381	100.032	4,287,193	4.430	15.891	2,903,504	3.300	105.023	45,032,114	46.536	174.046
1919	39,099,471	39.494	105.234	4,257,600	4.300	15.091	2,834,421	2.863	100.144	46,476,696	46.945	182.838
1920	39,128,106	39.918	105.384	4,111,993	4.195	11.155	2,728,384	2.783	92.657	45,797,661	46.722	178.704

Digitized by Google

TABLE B12.—*Aggregate capacity (in tons) of cars owned and operated by the railroads.*—Continued.

Year.	Tank cars.			Refrigerator cars.			All others.			Total cars.	
	Capacity of cars in service.	Per cent—		Capacity of cars in service.	Per cent—		Capacity of cars in service.	Per cent—		Capacity of cars in service.	Per cent increase over 1902.
		Of total.	Increase over 1902.		Of total.	Increase over 1902.		Of total.	Increase over 1902.		
Year ended June 30—											
1902	106,957	0.252	.....	472,635	1.117	.....	1,114,477	2.635	.....	42,292,977	.....
1903	156,274	.322	46.109	576,264	1.187	21.935	1,386,991	2.877	24.452	48,530,281	14.2
1904	160,153	.315	49.735	615,500	1.212	30.227	1,384,359	2.728	24.215	50,759,133	20.0
1905	180,490	.338	68.750	753,723	1.415	59.472	1,585,683	2.977	42.280	53,255,093	25.9
1906	195,397	.330	82.687	918,599	1.555	94.356	1,785,679	3.023	60.225	59,059,302	39.6
1907	219,994	.328	105.609	991,379	1.478	109.755	2,337,014	3.486	109.695	67,033,324	58.5
1908	261,267	.357	144.272	830,185	1.135	75.650	2,515,563	3.441	125.716	73,096,522	72.8
1909	254,683	.348	138.117	838,741	1.146	77.460	2,705,945	3.699	142.799	73,137,546	72.9
1910	290,115	.378	171.244	925,210	1.208	95.755	2,935,524	3.833	163.398	76,578,735	81.1
1911	306,564	.378	186.623	964,994	1.190	104.178	3,117,279	3.844	179.706	81,077,028	91.7
1912	311,463	.375	191.203	950,803	1.146	101.170	3,564,164	4.295	219.805	82,905,418	96.2
1913	327,727	.376	206.410	1,357,403	1.560	187.192	3,798,080	4.366	240.794	86,978,145	105.7
1914	340,722	.374	218.559	1,577,973	1.734	233.867	4,040,612	4.441	262.556	90,977,098	115.1
1915	379,415	.413	254.736	1,681,212	1.822	255.710	3,913,556	4.242	251.155	92,237,691	118.1
1916	391,176	.421	266.292	1,672,967	1.799	253.964	4,012,990	4.317	260.078	92,945,535	119.8
Year ended Dec. 31—											
1916	395,808	.419	270.062	1,666,800	1.764	252.661	4,159,836	4.404	273.954	94,440,650	123.3
1917	365,347	.382	241.583	1,688,735	1.768	257.302	3,857,549	4.040	246.131	95,467,084	125.7
1918	411,214	.425	284.466	1,991,301	2.057	321.318	4,032,914	4.167	261.865	96,766,585	128.8
1919	400,362	.404	274.320	1,989,198	2.009	320.872	3,943,293	3.983	253.824	99,001,041	134.1
1920	481,143	.491	349.847	1,897,957	1.936	301.569	3,875,020	3.953	247.698	98,020,264	131.8

Digitized by Google

Item.	Fiscal years ended June 30—						Calendar years ended Dec. 31—				
	1911	1912	1913	1914	1915	1916	1916	1917	1918	1919	1920
Average capacity per freight car (tons):											
Box	33.6	33.9	34.5	35.1	35.6	36.1	36.3	33.6	34.7	35.9	37.3
Flat	33.4	33.9	34.9	35.7	36.8	37.4	37.7	38.3	38.5	38.8	39.2
Stock	30.3	30.5	30.9	31.3	32.0	32.3	32.4	32.8	33.3	34.5	33.8
Coal	42.1	42.9	44.0	45.1	46.0	47.1	47.6	48.3	48.5	48.9	49.1
Tank	39.4	39.7	39.9	39.9	40.3	40.2	40.4	40.3	41.6	41.2	46.4
Refrigerator	30.4	31.0	31.3	32.3	32.1	32.3	32.5	32.5	31.6	32.1	31.8
Other freight-carrying cars	38.6	39.5	41.3	42.1	44.0	44.9	45.2	45.7	45.9	45.0	46.2
Total freight-carrying cars	37.0	37.5	38.3	39.1	39.8	40.6	41.0	41.5	41.8	41.9	42.2
Freight cars of steel construction (number):											
Box					6,025	13,760	20,428	21,542	23,924	30,[illegible]7	
Flat					5,402	6,678	5,521	6,473	7,825	8,81[illegible]	
Stock								25	25	25	
Coal					446,312	471,067	486,968	517,125	529,715	547,043	
Tank					2,996	3,190	3,420	3,411	3,669	3,[illegible]43	
Refrigerator					506	605	605	705	705	704	
Other freight-carrying cars					40,069	42,537	45,222	46,255	47,391	45,672	
Total freight-carrying cars					501,309	537,237	561,770	595,536	612,255	637,415	
Freight cars of steel underframe construction (number):											
Box					392,196	428,101	450,796	474,870	490,387	513,[illegible]15	
Flat					40,538	39,231	40,957	41,722	41,132	41,[illegible]05	
Stock					28,746	30,009	29,968	33,619	36,389	3[illegible],319	
Coal					175,248	188,713	196,164	207,041	215,926	227,990	
Tank					2,283	3,014	3,034	3,183	3,937	3,817	
Refrigerator					18,920	20,961	21,451	22,822	23,956	23,929	
Other freight-carrying cars					18,250	19,830	20,696	19,174	20,745	19,887	
Total freight-carrying cars					676,176	729,859	763,066	802,431	832,472	868,262	

Digitized by Google

TABLE B14.—*Locomotives, passenger cars, and freight cars installed and retired, 1907 to 1920, Class I railroads.*

Year ended—	Locomotives.			Freight cars.			Passenger cars.		
	Number installed during year.	Number retired during year.	Net additions.	Number installed during year.	Number retired during year.	Net additions.	Number installed during year.	Number retired during year.	Net additions.
June 30—									
1907	3,774	36	3,738	192,896	1,541	191,355	1,989	41	1,948
1908	3,227	1,140	2,087	171,556	70,976	100,580	2,183	1,630	553
1909	1,549	1,333	216	67,925	83,223	[1] 15,298	1,786	1,591	195
1910	3,073	1,452	1,621	134,593	75,652	58,941	3,505	1,914	1,591
1911	3,694	1,468	2,226	125,532	68,031	57,501	4,250	1,701	2,549
1912	2,861	1,858	1,003	97,972	69,876	28,096	3,060	1,387	1,673
1913	4,381	2,338	2,043	162,670	96,825	65,845	2,823	1,842	981
1914	3,245	1,862	1,383	150,813	96,985	53,828	3,629	1,854	1,775
1915	1,114	1,507	[1] 393	86,012	90,347	[1] 4,335	2,664	1,385	1,279
1916	1,475	2,576	[1] 1,101	88,254	109,996	[1] 21,742	1,261	2,156	[1] 895
Dec. 31—									
1917	2,148	1,423	725	117,210	62,253	54,957	2,535	1,671	864
1918	2,803	977	1,826	65,249	56,024	9,225	1,817	1,051	766
1919	2,062	999	1,063	76,019	43,274	32,745	435	670	[1] 235
1920	2,033	1,226	807	64,655	72,498	[1] 7,843	785	758	27
Total	37,439	20,195	17,244	1,601,356	997,501	603,855	32,722	19,651	13,071

[1] Net retirements.

Digitized by Google

TABLE B15.—*Pullman Co.—Cars in service, years 1910 to 1921.*

Period.	Standard sleeping.	Tourist sleeping.	Parlor.	Dining.	Chair.	Composite.	Private.	Miscellaneous.	Total.	Total in service.
Equipment owned.										
Year ended July 31, 1910	3,695	646	723	24	.....	63	31	4	5,186	5,282
Year ended June 30—										
1911	4,155	683	807	24	.....	94	36	2	5,801	5,912
1912	4,370	695	861	24	.....	114	36	1	6,101	6,203
1913	4,772	728	1,103	14	.....	130	36	1	6,784	6,881
1914	5,095	783	1,143	14	.....	120	38	.....	7,193	7,283
1915	5,200	750	1,086	14	.....	115	36	.....	7,201	7,287
1916	5,287	731	1,089	10	.....	121	31	.....	7,269	7,357
Year ended Dec. 31—										
1916	5,306	742	1,086	7	.....	121	32	.....	7,294	7,380
1917	5,441	1,007	1,091	4	.....	127	32	4	7,706	7,733
1918	4,898	1,610	1,037	4	.....	126	32	4	7,711	7,726
1919	5,062	1,381	1,030	4	.....	126	32	4	7,639	7,662
1920	5,751	808	1,019	.....	.....	117	27	4	7,726	7,752
1921	5,992	764	928	.....	.....	116	26	.....	7,826	7,826
Equipment leased or otherwise acquired.										
Year ended July 31, 1910	.....	61	.....	.....	.....	36	.....	.....	97	.....
Year ended June 30—										
1911	.....	61	.....	.....	.....	48	.....	[1] 2	111	.....
1912	.....	61	3	.....	.....	36	.....	[1] 2	102	.....
1913	.....	61	.....	.....	.....	34	.....	[1] 2	97	.....
1914	.....	61	.....	.....	.....	28	.....	[1] 1	90	.....
1915	.....	61	.....	.....	.....	25	.....	.....	86	.....
1916	.....	61	.....	.....	.....	27	.....	.....	88	.....
Year ended Dec. 31—										
1916	.....	61	.....	.....	.....	25	.....	.....	86	.....
1917	.....	.....	.....	.....	.....	27	.....	.....	27	.....
1918	.....	.....	.....	.....	.....	15	.....	.....	15	.....
1919	.....	.....	.....	.....	.....	23	.....	.....	23	.....
1920	.....	.....	.....	.....	.....	26	.....	.....	26	.....
1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of cars of steel construction.										
Year ended July 31, 1910	123	.....	33	.....	.....	5	.....	.....	161	161
Year ended June 30—										
1911	691	.....	121	.....	.....	37	5	.....	854	854
1912	978	.....	181	.....	.....	57	5	.....	1,221	1,221
1913	1,417	.....	279	.....	.....	57	5	.....	1,758	1,758
1914	1,909	.....	388	.....	.....	63	10	.....	2,370	2,370
1915	2,210	.....	396	.....	.....	63	10	.....	2,679	2,679
1916	2,607	.....	462	.....	.....	69	10	.....	3,148	3,148
Year ended Dec. 31—										
1916	2,732	.....	462	.....	.....	69	13	.....	3,276	3,276
1917	3,126	.....	502	.....	.....	79	16	.....	3,723	3,723
1918	3,231	.....	502	.....	.....	79	16	.....	3,828	3,828
1919	3,224	.....	502	.....	.....	79	16	.....	3,821	3,821
1920	3,637	.....	502	.....	.....	79	16	.....	4,234	4,234
1921	4,968	213	756	.....	.....	110	24	.....	6,091	6,091

[1] Kitchen cars.

NOTE.—In 1920 there were 87 parlor cars owned or leased not in service of the respondent.

Digitized by Google

TABLE B24.—*Tons of revenue freight originating on roads.*

	Products of agriculture.	Products of animals.	Products of mines.	Products of forests.	Manufactures and miscellaneous.	Merchandise all L. C. L. freight.	Total tons originating on road.
UNITED STATES.							
All roads:							
June 30—							
1909....	53,468,496	14,844,837	271,602,072	89,936,421	126,176,279	47,303,246	583,351,351
1910....	78,736,587	20,294,144	544,604,373	113,060,825	197,766,164	72,139,689	1,026,491,782
Class I roads:							
June 30—							
1911....	81,780,833	22,832,623	483,861,437	79,345,066	198,578,184	35,175,184	901,572,797
1912....	86,433,452	24,963,749	506,205,249	74,796,425	198,339,389	36,991,143	926,999,387
1913....	102,658,070	25,669,437	592,163,631	93,761,623	212,564,315	41,160,991	1,067,978,067
1914....	98,825,133	26,352,289	574,900,013	91,093,595	192,429,574	40,239,497	1,023,131,101
1915....	109,483,126	28,900,428	507,249,821	76,674,621	159,353,291	43,936,160	925,996,847
1916....	112,460,531	29,155,548	649,660,256	89,139,376	229,377,101	50,394,509	1,151,187,321
Dec. 31—							
1916....	113,635,399	30,473,161	680,122,775	93,819,387	232,405,620	52,910,848	1,203,367,190
1917....	104,629,258	31,858,140	732,652,519	100,838,196	240,998,951	53,768,623	1,264,945,725
1918....	116,080,505	35,776,736	734,795,460	97,236,399	226,076,989	53,386,904	1,263,343,993
1919....	115,033,319	35,493,662	589,950,958	94,075,639	210,594,111	51,301,646	1,096,449,285
1920....	110,839,554	26,594,856	713,113,201	100,765,537	251,864,290	53,202,296	1,256,379,734
1921....	114,016,652	24,273,370	510,860,112	76,922,790	172,176,614	42,079,815	940,329,353
EASTERN DISTRICT.							
Class I roads:							
June 30—							
1914....	23,567,107	9,169,227	310,891,110	18,652,690	124,992,673	15,439,643	502,711,850
1915....	26,203,817	9,431,888	274,653,284	16,756,801	104,167,617	23,619,972	454,833,379
1916....	27,619,964	10,362,146	340,176,755	19,073,643	153,615,080	26,462,923	577,340,511
Dec. 31—							
1916....	27,249,685	10,402,167	345,766,028	19,480,541	159,660,170	27,762,640	590,301,231
1917....	25,528,289	10,199,820	375,220,369	20,417,230	158,309,499	28,169,178	617,844,385
1918....	29,172,750	11,667,743	379,947,877	20,246,829	145,577,461	28,091,213	614,703,873
1919....	27,728,653	11,231,780	309,168,319	17,024,634	133,902,801	25,092,361	524,148,548
1920....	25,883,601	7,427,608	374,549,637	17,480,837	156,681,097	25,722,130	607,744,910
1921....	24,775,509	6,930,589	280,034,256	13,370,302	103,628,264	20,802,549	449,541,469
SOUTHERN DISTRICT (INCLUDING POCAHONTAS REGION).							
Class I roads:							
June 30—							
1914....	14,187,450	3,074,890	101,221,544	26,717,932	21,659,186	7,467,178	174,319,180
1915....	13,589,457	2,154,974	92,585,043	21,024,589	18,237,249	6,891,059	154,482,371
1916....	13,098,801	2,399,401	116,648,909	26,087,341	22,834,481	6,659,439	187,728,372
Dec. 31—							
1916....	13,331,634	2,639,953	120,721,574	28,029,332	24,731,835	6,938,483	196,392,311
1917....	13,410,698	2,829,092	129,277,314	30,622,307	27,869,989	7,474,836	211,474,636
1918....	15,040,720	3,294,640	132,566,465	28,391,232	28,779,642	8,003,111	216,081,819
1919....	15,751,467	3,620,289	112,285,105	27,358,814	26,764,847	8,783,381	194,564,103
1920....	14,140,670	2,295,985	136,934,333	29,844,479	34,029,218	9,891,288	224,127,173
1921....	13,352,427	1,878,073	111,820,562	22,194,762	29,019,938	7,921,695	177,178,457
WESTERN DISTRICT.							
Class I roads:							
June 30—							
1914....	61,070,376	14,108,372	161,887,359	45,723,573	45,977,715	17,332,676	346,100,071
1915....	69,689,852	14,413,566	140,011,494	38,892,631	36,948,425	16,425,129	316,381,097
1916....	71,741,766	16,394,001	192,834,592	43,978,392	43,927,540	17,272,147	386,148,438
Dec. 31—							
1916....	73,054,080	17,431,041	213,635,173	46,329,514	48,014,115	18,209,725	416,673,648
1917....	65,690,871	18,829,234	228,154,836	49,798,659	54,098,493	18,124,611	434,696,704
1918....	71,831,026	20,814,353	222,282,118	48,618,338	51,719,886	17,292,580	432,558,301
1919....	71,553,199	20,641,593	168,497,534	49,692,191	49,926,463	17,425,674	377,736,654
1920....	70,815,083	16,871,263	201,629,231	53,440,221	64,162,975	17,588,878	424,507,651
1921....	75,888,716	15,464,708	119,005,294	41,357,726	43,537,412	13,355,571	313,609,427

NOTE.—Returns not available by districts prior to year 1914.

Digitized by Google

TABLE B25.

PERCENTAGES INDICATING THE RELATIVE VOLUME OF TONNAGE ORIGINATED.

	Products of mines.		Manufactures and miscellaneous.		Products of forests.		Products of animals.		Products of agriculture.		Merchandise and L. C. L.	
	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.
EASTERN DISTRICT.												
June 30—												
1914	61.8	54.2	24.8	64.9	3.7	20.5	1.8	34.8	4.6	23.8	3.1	38.3
1915	60.3	54.1	22.9	65.4	3.6	21.9	2.1	36.3	5.7	23.9	5.2	50.3
1916	58.9	52.4	26.6	69.7	3.3	21.4	1.8	35.5	4.7	24.6	4.6	52.5
Dec. 31—												
1916	58.5	50.8	27.0	68.6	3.2	20.7	1.7	34.1	4.6	24.0	4.6	52.5
1917	60.7	51.2	25.6	65.9	3.8	20.2	1.6	32.0	4.1	24.4	4.5	52.4
1918	61.8	51.6	23.6	64.4	3.2	20.8	1.8	32.6	4.7	25.1	4.5	52.6
1919	58.7	52.4	25.5	63.6	3.2	18.1	2.1	31.6	5.2	24.1	4.7	48.9
1920	61.6	52.5	25.7	62.2	2.8	17.3	1.2	27.9	4.2	23.4	4.2	48.3
1921	62.3	54.8	23.0	60.1	2.9	12.4	1.5	28.5	5.5	21.7	4.0	49.4
SOUTHERN AND POCAHONTAS DISTRICTS.												
June 30—												
1914	58.1	17.6	12.4	11.2	15.3	29.3	1.7	11.7	8.1	14.4	4.2	18.5
1915	59.9	18.3	11.8	11.4	13.6	27.4	1.3	8.3	8.7	12.4	4.4	14.7
1916	62.1	17.9	12.1	10.3	13.8	29.2	1.2	8.2	6.9	11.6	3.5	13.2
Dec. 31—												
1916	61.4	17.8	12.6	10.6	14.2	29.9	1.3	8.7	6.7	11.7	3.5	13.1
1917	61.1	17.6	12.1	11.6	14.5	30.3	1.3	8.9	6.3	12.8	3.5	13.9
1918	61.2	18.0	13.3	12.7	13.1	29.2	1.6	9.2	6.9	13.0	3.7	15.0
1919	57.7	19.0	13.8	12.7	14.1	29.1	1.8	10.2	8.1	13.7	4.5	17.1
1920	61.1	19.2	13.8	12.3	13.3	29.6	1.0	8.6	6.3	12.8	4.4	18.6
1921	63.1	21.8	11.2	11.6	12.5	28.8	1.0	7.8	7.5	11.7	4.4	18.8
WESTERN DISTRICT.												
June 30—												
1914	46.7	28.2	13.2	23.8	13.2	50.2	4.1	53.5	17.6	61.7	5.6	48.1
1915	44.2	27.6	11.7	23.2	12.3	50.7	4.6	55.4	22.0	63.6	5.2	35.0
1916	49.9	29.7	11.4	20.0	11.4	49.3	4.2	56.2	18.5	63.7	4.5	34.3

Digitized by Google

TABLE B25.

PERCENTAGES INDICATING THE RELATIVE VOLUME OF TONNAGE ORIGINATED—Continued.

	Products of mines.		Manufactures and miscellaneous.		Products of forests.		Products of animals.		Products of agriculture.		Merchandise and L. C. L.	
	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.	Per cent of total tonnage of district.	Per cent of total tonnage this commodity all districts.
Dec. 31—												
1916	51.2	31.4	11.5	20.7	11.1	49.4	4.2	57.2	17.5	64.3	4.4	34.4
1917	52.5	31.1	12.4	22.5	11.5	49.4	4.3	59.1	15.1	62.8	4.2	33.7
1918	51.4	30.1	11.9	22.9	11.2	50.0	4.8	58.1	16.6	61.9	3.9	32.4
1919	44.6	28.6	13.2	23.7	13.2	52.8	5.5	58.1	18.9	62.2	4.6	34.0
1920	47.5	28.3	15.1	25.5	12.6	53.0	4.0	63.4	18.4	63.9	4.1	33.1
1921	37.9	23.2	15.5	28.2	13.2	63.7	4.9	63.7	24.2	66.5	4.2	31.7
	PER CENT OF TOTAL TONNAGE.											
UNITED STATES.												
June 30—												
1914	54.8	.....	16.7	.....	8.3	.....	2.8	.....	11.9	.....	5.1	.....
1915	56.1	.....	18.8	.....	8.9	.....	2.6	.....	9.7	.....	3.9	.....
1916	56.4	.....	19.1	.....	7.7	.....	2.5	.....	9.8	.....	4.4	.....
Dec. 31—												
1916	56.5	.....	19.3	.....	7.8	.....	2.5	.....	9.4	.....	4.4	.....
1917	57.9	.....	19.0	.....	8.0	.....	2.5	.....	8.3	.....	4.2	.....
1918	58.2	.....	17.9	.....	7.7	.....	2.8	.....	9.2	.....	4.2	.....
1919	53.8	.....	19.2	.....	8.6	.....	3.2	.....	10.5	.....	4.7	.....
1920	56.8	.....	20.0	.....	8.0	.....	2.1	.....	8.8	.....	4.2	.....
1921	54.3	.....	18.3	.....	8.1	.....	2.5	.....	12.3	.....	4.4	.....

Digitized by Google

	Products of mines.		Manufactures and miscellaneous.		Products of forests.		Products of animals.		Products of agriculture.		Merchandise and L. C. L.		Total.	
	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.
EASTERN DISTRICT.														
June 30—														
1914														
1915	[1] 11.7	[1] 11.7	[1] 16.7	[1] 16.7	[1] 10.2	[1] 10.2	2.8	2.8	11.2	11.2	52.9	52.9	[1] 9.5	[1] 9.5
1916	23.8	9.4	47.4	22.8	13.8	2.2	9.8	13.0	5.4	17.1	12.0	71.4	26.9	14.8
Dec. 31—														
1916	1.6	11.2	3.9	27.7	2.0	4.3	.4	13.4	[1] 1.4	15.6	4.9	79.8	2.2	17.4
1917	8.5	20.7	[1] .9	26.6	4.9	9.4	[1] 2.0	11.2	[1] 6.3	8.3	1.4	82.4	4.6	22.9
1918	1.2	22.2	[1] 8.2	16.4	[1] .9	8.5	14.3	27.2	14.2	23.7	[1] .3	81.9	[1] .5	22.2
1919	[1] 18.6	[1] .6	[1] 8.0	7.1	[1] 15.9	[1] 8.7	[1] 3.8	22.4	[1] 5.0	17.6	[1] 10.7	62.5	[1] 14.8	4.2
1920	21.1	20.4	17.0	25.3	2.6	[1] 6.3	[1] 33.9	[1] 19.0	[1] 6.7	9.8	2.5	66.5	15.9	20.9
1921	[1] 25.3	[1] 10.0	[1] 33.9	[1] 17.1	[1] 23.6	[1] 28.4	[1] 6.7	[1] 24.5	[1] 4.3	5.1	[1] 19.2	34.7	[1] 26.1	[1] 10.6
SOUTHERN AND POCAHONTAS DISTRICTS.														
June 30—														
1914														
1915	[1] 8.6	[1] 8.6	[1] 15.8	[1] 15.8	[1] 21.3	[1] 21.3	[1] 29.9	[1] 29.9	[1] 4.2	[1] 4.2	[1] 7.7	[1] 7.7	[1] 11.4	[1] 11.4
1916	25.9	15.2	25.2	5.5	24.1	[1] 2.4	11.3	[1] 22.0	[1] 3.6	[1] 7.7	[1] 3.4	[1] 10.8	21.5	7.7
Dec. 31—														
1916	3.5	19.2	8.3	14.2	7.4	4.9	10.0	[1] 14.2	1.7	[1] 6.1	4.2	[1] 7.1	4.6	12.6
1917	7.1	27.7	12.6	28.6	9.2	14.6	7.1	[1] 8.0	.6	[1] 5.5	7.7	.1	7.6	21.3
1918	2.5	30.9	3.3	32.9	[1] 7.3	6.2	16.4	7.1	12.2	6.0	7.0	7.2	2.2	23.9
1919	[1] 15.3	10.9	[1] 7.1	23.6	[1] 3.7	2.4	9.9	17.7	4.6	11.0	9.7	17.6	[1] 10.0	11.6
1920	21.9	35.3	15.9	43.3	9.1	11.7	[1] 36.6	25.4	[1] 10.3	[1] .4	12.6	32.4	15.2	28.5
1921	[1] 18.4	10.4	[1] 35.5	[1] 7.6	[1] 25.7	[1] 17.0	[1] 18.2	[1] 38.9	[1] 5.6	[1] 5.9	[1] 20.0	6.0	[1] 21.0	[1] 1.6
WESTERN DISTRICT.														
June 30—														
1914														
1915	[1] 13.5	[1] 13.5	[1] 19.7	[1] 19.7	[1] 14.9	[1] 14.9	2.1	2.1	14.1	14.1	[1] 5.3	[1] 5.3	[1] 8.6	[1] 8.6
1916	37.7	19.1	18.9	[1] 4.5	13.1	[1] 3.9	13.7	16.2	2.9	17.4	5.1	[1] .4	22.0	11.5
Dec. 31—														
1916	10.8	31.9	9.3	4.4	5.3	1.3	6.3	23.5	1.8	19.6	5.4	5.0	7.8	20.3
1917	6.8	40.9	12.7	17.6	7.5	8.9	8.0	33.4	[1] 10.1	7.5	[1] .5	4.5	4.3	25.5
1918	[1] 2.6	37.3	[1] 4.4	12.4	[1] 2.4	6.3	10.5	47.5	9.3	17.6	4.6	[1] .3	[1] .5	24.9

[1] Decrease.

70678—H. Rept. 408, 67–1, pt 3——39

Digitized by Google

	Products of mines.		Manufactures and miscellaneous.		Products of forests.		Products of animals.		Products of agriculture.		Merchandise and L. C. L.		Total.	
	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.	Per cent of annual increase.	Per cent increase over 1914.
WESTERN DISTRICT—continued.														
Dec. 31—Continued.														
1919	[1] 26.2	4.0	[1] 3.5	8.5	2.2	8.6	[1] .9	46.3	[1] .4	17.1	.7	.5	[1] 12.8	9.1
1920	19.6	24.5	28.5	39.5	7.5	16.8	[1] 18.3	19.5	[1] 1.1	15.9	9	1.4	12.3	22.6
1921	[1] 41.0	[1] 26.5	[1] 24.4	5.5	[1] 22.7	[1] 9.6	[1] 8.4	9.6	7.1	24.2	[1] 24.1	[1] 23.0	[1] 26.2	[1] 9.4
UNITED STATES.														
All roads:														
1900–1910	100.5	.....	45.2	.....	88.4	.....	36.7	.....	47.2	.....	52.5	.....	89.0	.....
1911	[1] 11.2	.....	.4	.....	[1] 29.8	.....	12.5	.....	3.8	.....	[1] 51.3	.....	[1] 12.2	.....
1912	4.6	.....	[1] .1	.....	[1] 5.8	.....	5.4	.....	5.7	.....	5.1	.....	2.8	.....
1913	16.9	.....	7.1	.....	25.3	.....	6.7	.....	18.7	.....	11.2	.....	15.2	.....
1914	[1] 3.1	.....	[1] 9.4	.....	[1] 2.9	.....	2.6	.....	[1] 3.8	.....	[1] 2.3	.....	[1] 4.2	.....
1915	[1] 11.6	[1] 11.6	[1] 17.3	[1] 17.3	[1] 15.8	[1] 15.8	[1] 1.4	[1] 1.4	10.8	10.8	16.6	16.6	[1] 9.6	[1] 9.6
1916	28.1	13.2	38.3	14.4	16.2	[1] 2.2	12.1	10.6	2.7	13.8	7.3	25.2	24.3	12.5
Dec. 31—														
1916	4.7	18.5	5.4	20.6	5.2	3.0	4.5	15.6	1.0	15.0	5.0	31.4	4.5	17.6
1917	7.7	27.6	3.4	24.7	7.5	10.7	4.5	20.9	[1] 7.9	5.8	1.6	33.6	5.0	23.5
1918	.3	28.0	[1] 5.9	17.3	[1] 3.6	6.7	12.3	35.7	10.9	17.4	[1] .8	32.6	[1] .1	23.4
1919	[1] 19.7	2.8	[1] 6.9	9.3	[1] 3.3	8.3	[1] .8	34.7	[1] .9	16.4	[1] 3.9	27.5	[1] 13.2	7.1
1920	20.9	24.2	19.6	30.7	7.1	10.6	[1] 25.1	[1] .9	[1] 3.7	12.1	3.7	32.2	14.6	22.8
1921	[1] 28.3	[1] 11.0	[1] 31.6	[1] 10.7	[1] 23.7	[1] 15.5	[1] 8.7	[1] 7.9	2.9	15.3	[1] 20.9	4.5	[1] 25.1	[1] 8.1

[1] Decrease.

Digitized by Google

TABLE B21.—Statement showing the surpluses and shortages of freight cars the first of each month, 1908–1921, inclusive, by Class I railroads.

[Compiled by American Railway Association, Car Service Division.]

	Box.				All coal.				All freight.			
	Total.		Net.		Total.		Net.		Total.		Net.	
	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.
1908.												
January	87,714	187	87,527		62,150	191	61,959		206,880	724	206,156	
February	111,376	737	110,639		156,620	0	156,620		343,217	1,085	342,132	
March	103,905	943	102,962		139,223	600	138,623		314,992	1,619	313,373	
April	111,148	319	110,829		120,669	8	120,661		306,507	528	305,979	
May	147,971	145	147,826		186,742	16	186,728		413,605	267	413,338	
June	144,697	82	144,615		162,695	12	162,683		381,904	125	381,779	
July	123,112	266	122,846		130,149	120	130,029		313,298	451	312,847	
August	114,075	371	113,704		104,544	30	104,514		281,621	635	280,986	
September	84,644	928	83,716		85,247	355	84,892		222,632	1,418	221,214	
October	42,593	7,313	35,280		49,795	224	49,571		133,792	8,114	125,678	
November	39,383	8,175	31,208		31,541	2,261	29,280		110,912	10,839	100,073	
December	45,194	7,923	37,271		43,854	900	42,954		132,829	9,210	123,619	
1909.												
January	146,255	170	146,085		117,686	120	117,566		333,019	506	332,513	
February	110,632	97	110,535		122,711	49	122,662		301,571	288	301,283	
March	83,779	271	83,508		149,986	11	149,975		299,925	685	299,240	
April	101,344	158	101,186		126,846	116	126,430		296,600	399	296,201	
May	107,665	144	107,521		110,538	74	110,464		282,328	497	281,831	
June	118,257	83	118,174		97,006	1,011	95,995		273,890	1,240	272,650	
July	121,441	211	121,230		89,292	193	89,099		262,944	827	262,117	
August	103,646	334	103,312		61,486	986	60,500		207,173	169	207,004	
September	54,284	1,713	52,571		25,842	1,585	24,257		110,576	3,899	106,677	
October	22,330	8,184	14,146		11,239	4,392	6,847		53,388	14,582	38,806	
November	13,029	23,138		10,109	5,287	8,743		3,456	30,896	36,636		5,740
December	17,538	12,230	5,308		5,628	9,542		3,914	39,528	27,496	12,032	
1910.												
January	20,839	7,304	13,535		10,204	4,906	5,298		52,309	13,893	38,416	
February	21,352	13,393	7,959		8,173	8,136	37		51,600	26,625	24,975	
March	14,469	15,349		880	9,287	9,942		655	45,315	29,907	15,408	
April	15,834	8,810	7,024		7,400	6,649	751		46,672	19,786	25,886	
May	29,366	1,778	27,588		44,391	1,544	42,847		102,085	5,766	96,319	
June	48,326	1,416	46,910		29,888	1,837	28,051		115,390	4,729	110,661	

Digitized by Google

TABLE B27.—*Statement showing the surplusages and shortages of freight cars the first of each month, 1908–1921, inclusive, of Class I railroads*—Continued.

	Box.				All coal.				All freight.			
	Total.		Net.		Total.		Net.		Total.		Net.	
	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.
1910.												
July	65,078	118	64,960		36,775	20	36,755		143,824	959	142,865	
August	41,040	1,451	39,589		29,093	141	28,952		105,564	2,783	102,781	
September	20,315	4,594	15,721		14,108	2,964	11,144		60,022	9,293	50,729	
October	12,144	9,665	2,479		7,871	5,044	2,827		42,469	17,941	24,528	
November	8,257	12,898		4,641	5,778	5,325	453		29,131	21,896	7,235	
December	12,368	7,305	5,063		7,249	4,230	3,019		43,066	14,673	28,393	
1911.												
January	39,361	1,064	38,297		34,483	160	34,323		110,432	3,508	106,924	
February	40,186	175	40,011		71,235	13	71,222		158,355	1,287	155,068	
March	38,881	1,704	37,177		103,742	86	103,656		192,673	2,831	189,842	
April	40,546	384	40,162		110,927	11	110,916		196,217	1,330	194,887	
May	55,052	91	54,961		85,351	2,003	83,348		189,324	2,518	187,006	
June	51,200	253	50,947		68,043	148	67,895		168,233	835	167,398	
July	52,875	879	51,996		70,363	67	70,294		165,508	1,887	163,621	
August	43,604	559	43,045		47,882	905	46,977		130,136	2,045	128,091	
September	28,108	2,743	25,365		29,249	921	28,326		88,866	4,325	84,541	
October	12,372	6,632	5,740		19,543	955	18,588		58,382	8,344	50,038	
November	7,166	14,943		7,777	12,148	2,278	9,870		39,306	18,774	20,532	
December	11,031	12,277		1,246	20,662	2,813	17,849		53,840	17,697	36,143	
1912.												
January	36,145	5,953	30,192		64,719	88	64,631		142,316	6,378	135,938	
February	12,781	15,042		2,261	14,042	5,538	8,504		55,592	23,011	32,581	
March	9,024	23,514		14,490	10,239	8,153	2,086		44,984	37,142	7,842	
April	14,681	19,413		4,732	12,540	8,159	4,381		52,682	33,974	18,708	
May	19,583	6,152	13,431		94,692	2,144	92,548		151,186	12,305	138,881	
June	23,298	2,918	20,380		71,068	2,649	68,419		123,683	7,482	116,201	
July	29,662	3,461	26,201		13,242	1,036	12,206		70,731	6,707	64,024	
August	28,034	4,197	23,837		11,964	2,779	9,185		65,904	9,394	56,510	
September	14,180	14,907		727	5,293	7,008		1,715	36,047	26,297	9,750	
October	8,351	27,294		18,943	6,194	11,711		5,517	26,754	44,547		17,793
November	2,179	40,356		36,177	5,123	18,374		13,253	17,289	67,270		49,981
December	5,462	38,723		33,241	7,599	12,778		5,179	26,135	62,536		36,401
1913.												
January	13,078	24,095		11,018	16,823	4,736	12,087		50,689	33,601	17,088	

Digitized by Google

February	23,000	16,683	6,317		18,687	5,180	13,507		58,529	27,148	51,391	
March	15,967	17,645		1,678	18,039	3,355	14,684		58,529	27,148	51,391	
April	23,043	7,050	15,993		20,209	1,400	18,809		68,792	10,804	57,988	
May	18,350	7,154	11,196		12,243	3,733	8,519		53,977	14,178	39,799	
June	23,849	4,163	19,686		11,601	3,109	8,492		60,291	9,383	50,908	
July	34,685	2,362	32,323		11,055	2,821	6,234		70,740	7,036	63,704	
August	32,673	5,589	27,084		8,810	4,029	4,781		69,716	11,261	58,455	
September	42,992	7,627	35,365		8,689	5,209	3,480		73,576	15,270	56,306	
October	16,067	17,278		1,191	7,953	10,393		2,440	41,994	31,620	10,374	
November	13,229	22,918		9,689	6,720	12,695		5,875	38,276	40,118		1,842
December	26,191	3,699	22,492		17,621	5,095	12,526		67,466	10,212	57,254	
1914.												
January	73,825	1,070	72,755		72,535	57	72,478		190,521	1,671	188,850	
February	74,301	1,387	72,914		85,489	102	85,387		211,960	2,282	209,678	
March	52,691	2,983	49,708		64,822	1,394	63,428		159,480	5,573	153,907	
April	56,465	1,030	55,435		41,055	615	40,440		141,525	2,013	139,512	
May	76,000	1,406	74,594		100,399	29	100,370		230,533	1,654	228,879	
June	90,136	453	89,683		94,770	7	94,763		242,572	770	241,802	
July	81,599	634	80,965		91,280	430	90,850		220,875	1,333	219,542	
August	72,371	1,287	71,084		82,284	110	82,174		198,998	2,333	196,665	
September	76,386	1,464	74,922		46,141	66	46,075		165,244	1,918	163,326	
October	55,615	484	55,131		37,996	772	37,224		133,382	2,355	131,027	
1915.												
February									280,573	1,162	279,411	
March									322,290	543	321,747	
April									327,441	357	327,084	
May									292,269	966	291,303	
June									300,146	218	299,928	
July									276,421	785	275,636	
August									266,312	948	265,364	
September									191,309	6,300	185,009	
October									88,351	10,010	78,341	
November									48,566	25,552	23,014	
December									51,593	22,615	28,978	
1916.												
January									70,391	23,310	47,081	
February									53,611	33,312	20,299	
March									43,025	62,562		19,537
April									52,274	47,636	4,638	
May									63,344	29,983	33,361	
June									70,310	12,617	57,693	
July									68,035	15,801	52,234	
August									49,753	39,991	9,762	
September									45,044	64,917		19,873
October									34,157	94,854		60,697
November									24,837	139,745		114,908
December									21,027	126,454		105,427

Digitized by Google

TABLE B27.—*Statement showing the surplusages and shortages of freight cars the first of each month, 1908–1921, inclusive, of Class I railroads*—Continued.

	Box.				All coal.				All freight.			
	Total.		Net.		Total.		Net.		Total.		Net.	
	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.	Surplus.	Shortage.
1917.												
January	10,030	61,504		51,474					39,657	98,539		58,882
February	7,324	84,686		77,362					26,480	136,150		109,670
March	6,135	87,330		81,195					25,247	150,220		124,973
April	4,251	106,865		102,614					19,577	162,503		142,926
May	4,482	95,651		91,169					18,997	164,446		145,449
June	7,214	68,442		61,228					23,500	128,627		105,127
July	9,710	50,535		40,825					28,646	103,942		75,296
August	23,899	35,842		11,943					43,481	77,257		33,776
September	25,485	40,907		15,422					50,386	81,977		31,591
October	4,959	48,654		43,695					24,192	94,572		70,380
November	2,556	81,781		79,225					11,173	151,185		140,012
December	2,356	77,028		74,672					12,066	139,197		127,131
1918.												
January	5,060	75,416		70,356					20,337	110,332		89,995
February	12,078	71,166		59,088					24,297	122,341		98,044
March	6,450	90,648		84,198					21,890	159,992		138,102
April	10,444	54,428		43,984	7,770	13,079		5,309	31,971	82,555		50,584
May	21,165	21,630		465	14,988	14,160	828		59,721	45,886	13,835	
June	44,018	5,259	38,759		11,044	4,861	6,183		86,263	15,058	71,205	
July	47,705	9,630	38,075		11,256	8,248	3,008		83,563	20,757	62,806	
August	56,786	13,870	42,916		8,267	15,311		7,044	92,339	33,905	58,434	
September	29,507	13,502	16,005		11,447	10,137	1,310		64,792	28,870	35,922	
October	23,990	10,052	13,938		14,866	4,380	10,486		66,988	21,248	45,740	
November	44,901	6,561	38,340		32,555	3,112	29,443		105,479	13,788	91,691	
December	49,232	5,741	43,491		82,130	2,025	80,105		167,177	10,350	156,827	
1919.												
January	130,654	168	130,486		96,744	96	96,648		270,177	833	269,344	
February	166,915	299	166,616		134,910	52	134,858		355,488	1,036	354,452	
March	198,522	917	197,605		181,919	748	181,171		451,739	2,162	449,577	
April	161,796	960	160,836		183,993	37	183,956		427,936	1,512	426,424	
May	154,999	894	154,105		152,387	720	151,667		367,666	2,106	365,560	
June	134,943	1,468	133,475		97,524	163	97,361		286,984	2,156	284,828	
July	107,933	2,781	105,152		43,901	550	43,351		192,910	4,645	188,265	
August	52,641	11,110	41,531		29,912	4,546	25,366		107,900	19,271	88,629	
September	9,983	43,241		33,258	12,880	11,484	1,396		96,090	60,478		24,388

Digitized by Google

November	279	36,203	.....	35,924	5,646	9,050	.....	3,404	1,549	37,454	.....	29,455
December	160	32,795	.....	32,635	49,618	4,439	45,179	.....	52,890	45,667	7,223	.....
1920.												
January	2,318	37,604	.....	35,286	12,139	9,419	2,720	.....	28,207	54,582	.....	26,375
February	474	57,184	.....	56,710	847	22,254	.....	21,407	7,203	91,801	.....	84,598
March	362	39,733	.....	39,371	165	19,282	.....	19,117	4,838	68,204	.....	63,366
April	938	54,548	.....	53,610	145	19,651	.....	19,506	5,580	87,600	.....	82,020
May	3,955	40,664	.....	36,709	1,723	24,736	.....	23,013	7,586	76,683	.....	69,097
June	284	60,738	.....	60,454	247	31,681	.....	31,434	1,853	105,807	.....	103,954
July	126	65,743	.....	65,617	92	38,095	.....	38,003	788	123,035	.....	122,247
August	21	61,971	.....	61,950	531	45,059	.....	44,528	1,584	125,810	.....	124,226
September	21	80,613	.....	80,592	236	44,927	.....	44,691	1,022	147,309	.....	146,287
October	79	41,912	.....	41,833	1,521	23,930	.....	22,409	1,916	80,141	.....	78,225
November	2,424	18,439	.....	16,015	107	27,549	.....	27,442	3,856	55,412	.....	51,556
December	38,593	2,837	35,756	.....	1,786	11,091	.....	9,305	49,695	19,673	30,022	.....
1921.												
January	157,775	736	157,039	.....	17,067	2,159	14,908	.....	204,408	3,808	200,600	.....
February	193,512	317	193,195	.....	90,685	108	90,577	.....	324,186	810	323,376	.....
March	184,451	468	183,983	.....	172,850	71	172,779	.....	413,450	650	412,800	.....
April	180,739	26	180,713	.....	255,055	8	255,047	.....	495,904	123	495,781	.....
May	189,127	87	189,040	.....	229,443	108	229,335	.....	482,352	276	482,076	.....
June	165,066	263	164,803	.....	165,102	50	165,052	.....	394,040	339	393,701	.....
July	146,298	187	146,111	.....	162,537	310	162,227	.....	373,791	663	373,128	.....
August	100,207	3,710	96,497	.....	161,723	83	161,640	.....	321,781	3,905	317,876	.....
September	69,238	641	68,597	.....	130,596	67	130,529	.....	246,740	739	246,001	.....
October	42,093	2,178	39,915	.....	98,048	142	97,906	.....	172,420	3,321	169,099	.....
November	22,622	5,301	17,321	.....	33,643	4,339	29,304	.....	80,203	11,219	68,984	.....
December	113,874	264	113,610	.....	132,693	.....	132,693	.....	282,926	302	282,624	.....

Figures subsequent to April, 1918, do not include Canadian and Mexican roads, Jan. 25, 1922.

Digitized by Google

TABLE B-28.—*Car mileage of Class I railroads in the United States, 1911 to 1920.*

[Excludes switching and terminal companies.]

Item.	Fiscal years ended June 30—					
	1911	1912	1913	1914	1915	1916
Car mileage:						
Freight—Train—						
Loaded	12,666,136,106	12,890,515,240	14,102,776,186	13,507,267,661	12,809,063,467	15,015,971,887
Empty	5,718,739,249	5,655,788,917	6,025,619,589	6,426,178,263	6,513,299,809	6,776,878,621
Caboose	607,250,699	595,117,363	627,961,528	593,750,229	540,258,743	597,226,774
Total freight-train car-miles	18,992,126,054	19,141,421,520	20,756,357,303	20,527,196,153	19,862,622,019	22,390,077,282
Passenger—Train—						
Passenger	1,405,900,486	1,412,429,536	1,449,595,669	1,457,194,037	1,328,089,006	1,348,892,795
Sleeping, parlor, and observation	667,457,999	722,249,292	750,703,079	783,970,167	750,723,947	806,704,925
Dining					118,517,670	123,859,413
Other passenger-train cars	981,696,116	1,019,097,228	1,054,449,996	1,085,474,682	975,274,768	1,031,363,617
Total passenger-train car-miles	3,055,054,601	3,153,776,056	3,254,748,744	3,326,638,886	3,172,605,391	3,310,820,750
Mixed—Train [1]—						
Freight loaded					143,225,926	154,636,193
Freight empty					59,681,399	62,966,970
Caboose					3,021,888	3,294,597
Total freight in mixed trains					205,929,213	220,897,760
Passenger					44,440,980	44,532,402
Sleeping, parlor, and observation					634,098	1,119,276
Dining					539	1,063
Other passenger-train					10,778,377	12,557,677
Total passenger in mixed-train					55,853,994	58,210,418
Total mixed-train car-miles					261,783,207	279,108,178
Special train:						
Freight, loaded	7,063,483	6,969,130	6,823,777	6,532,907	6,339,553	9,257,187
Freight, empty	107,270	195,708	588,382	297,511	205,992	1,674,824
Caboose	491,357	511,147	503,433	493,013	452,589	606,411
Total freight in special trains	7,662,110	7,675,985	7,915,592	7,323,431	6,998,434	11,538,422

Digitized by Google

Passenger	3,460,526	3,010,286	2,873,871	2,707,993	1,864,159	2,010,619
Sleeping, parlor, and observation	1,233,416	1,342,936	1,420,006	950,158	689,053	1,079,785
Dining					31,673	83,654
Other passenger train	996,206	892,691	777,476	691,480	387,194	456,048
Total passenger in special train	5,690,150	5,245,913	5,071,353	4,349,631	2,972,079	3,630,106
Total special-train car-miles	13,352,260	12,921,898	[6] 13,046,640	11,673,062	9,960,513	[3] 15,174,862
Total transportation service car-miles	22,060,532,915	22,308,119,474	24,024,152,687	23,865,508,101	23,306,981,130	25,995,181,072
Work service car-miles	388,842,054	405,793,953	459,510,025	444,486,802	221,118,910	261,181,338
Freight-train car-miles (in freight, mixed, and special trains):						
Loaded	12,673,199,589	12,897,484,370	14,109,599,963	13,513,800,568	12,958,628,946	15,179,865,267
Empty	5,718,846,519	5,655,984,625	6,026,207,971	6,426,475,774	6,573,187,200	6,841,520,415
Total (loaded and empty)	18,392,046,108	18,553,468,995	20,135,807,934	19,940,276,342	19,531,816,146	22,021,385,682
Per cent loaded to total	68.91	69.52	70.07	67.77	66.35	68.93
Caboose	607,742,056	595,628,510	628,464,961	594,243,242	543,733,520	601,127,782
Total freight-train car-miles	18,999,788,164	19,149,097,505	20,764,272,895	20,534,519,584	20,075,549,666	22,622,513,464
Passenger-train car-miles (in passenger, mixed, and special trains)	3,060,744,751	3,159,021,969	3,259,820,097	3,330,988,517	3,231,431,464	3,372,661,274
Total transportation service car-miles	22,060,532,915	22,308,119,474	[6] 24,024,152,687	23,865,508,101	23,306,981,130	[3] 25,995,181,072
Work service car-miles	388,842,054	405,793,953	459,510,025	444,486,802	221,118,910	261,181,338
Per cent freight car-miles to total in mixed trains					78.66	79.14
Per cent passenger car-miles to total in mixed trains					21.34	20.86
Per cent freight car-miles to total special trains	57.38	59.40	60.95	62.74	70.19	76.07
Per cent passenger car-miles to total in special trains	42.62	40.60	39.05	37.26	29.81	23.93

[1] For years prior to 1915 "Mixed-train car-miles" are included in the respective classes of freight-train and passenger-train car-mile.
[3] Includes 6,334 unclassified.
[6] Includes 59,695 unclassified.

Digitized by Google

TABLE B-28.—*Car mileage of Class I railroads in the United States, 1911 to 1920*—Continued.

Item.	Calendar years ended December 31—					
	1916	1917	1918	1919	1920	1921
Car mileage:						
Freight—Train—						
Loaded	15,714,456,158	15,774,877,027	14,884,642,008	14,176,430,767	15,231,697,948	.....
Empty	6,698,592,309	6,702,738,644	7,101,739,017	6,476,349,889	7,205,048,258	.....
Caboose	621,231,280	633,445,698	617,613,243	555,458,371	618,137,064	.....
Total freight-train car-miles	23,034,279,747	23,111,061,369	22,603,994,268	21,208,239,027	23,054,883,270	.....
Passenger—Train—						
Passenger	1,378,055,293	1,387,285,845	1,349,001,171	1,388,353,268	1,441,948,898	.....
Sleeping, parlor, and observation	800,097,475	847,720,522	736,102,889	829,153,007	881,040,639	.....
Dining	123,179,507	125,639,425	107,360,494	109,797,564	121,101,953	.....
Other passenger-train cars	1,058,266,340	1,078,036,657	1,047,084,283	1,086,038,762	1,134,067,008	.....
Total passenger-train car-miles	3,359,598,615	3,438,682,449	3,239,548,837	3,413,342,601	3,578,158,498	.....
Mixed—Train [1]—						
Freight loaded	154,906,436	148,934,506	134,767,678	130,604,857	124,441,036	.....
Freight empty	60,093,002	59,470,737	59,829,721	55,982,258	56,736,392	.....
Caboose	3,548,638	3,672,567	3,655,758	3,064,364	2,862,328	.....
Total freight in mixed trains	218,548,076	212,077,810	198,253,152	189,651,479	184,039,756	.....
Passenger	44,457,895	43,570,537	41,796,035	40,013,626	39,287,919	.....
Sleeping, parlor, and observation	4,707,579	6,459,284	3,695,335	1,324,987	957,955	.....
Dining	5,258	9,500	19,824	5,940	2,618	.....
Other passenger-train	12,447,057	11,760,747	10,996,227	11,542,640	10,583,684	.....
Total passenger in mixed-train	61,617,789	61,800,068	56,507,424	52,887,195	50,832,176	.....
Total mixed-train car-miles	280,165,865	273,877,878	254,760,576	242,538,674	234,871,932	.....
Special train:						
Freight, loaded	10,008,183	8,228,226	5,490,061	5,759,751	[2]	.....
Freight, empty	1,300,839	1,485,363	236,524	192,204	[2]	.....
Caboose	686,028	662,380	350,395	439,158	[2]	.....
Total freight in special trains	11,995,050	10,375,969	6,070,980	6,391,113	[2]	.....

Digitized by Google

Passenger	2,528,981	2,964,041	3,729,875	1,805,302	[2]	
Sleeping, parlor, and observation	1,469,418	2,667,596	5,645,103	570,346	[2]	
Dining	68,117	27,153	69,938	32,937	[2]	
Other passenger train	529,188	694,895	1,213,119	403,808	[2]	
Total passenger in special train	4,595,704	6,353,685	10,658,035	2,812,393	[2]	
Total special-train car-miles	[4] 16,600,482	[5] 16,736,653	16,735,015	9,203,506	10,137,677	
Total transportation service car-miles	26,690,644,709	26,840,358,349	26,115,038,696	24,873,323,808	26,878,051,377	
Work service car-miles	273,085,356	210,674,997	179,883,776	155,723,491	177,934,504	
Freight-train car-miles (in freight, mixed, and special trains):						
Loaded	15,879,370,777	15,982,049,759	15,024,899,742	14,312,795,375	15,356,138,984	12,479,496,000
Empty	6,759,986,150	6,763,694,744	7,161,805,262	6,532,524,351	7,261,784,650	7,330,736,000
Total (loaded and empty)	22,639,356,927	22,695,744,503	22,186,705,004	20,845,319,726	22,617,923,634	19,810,232,000
Per cent loaded to total	70.14	70.20	67.72	68.66	67.89	62.99
Caboose	625,465,946	637,770,645	621,619,396	558,961,893	620,999,392	517,023,000
Total freight-train car-miles	23,664,822,873	23,333,515,148	22,808,324,400	21,404,281,619	23,238,923,026	20,327,255,000
Passenger-train car-miles (in passenger, mixed, and special trains)	3,425,812,108	3,506,836,202	3,306,714,296	3,469,042,189	3,628,990,674	3,459,963,920
Total transportation service car-miles	[6] 26,690,644,709	[6] 26,840,358,349	26,115,038,696	24,873,323,808	[7] 26,878,051,377	23,787,218,920
Work service car-miles	273,085,356	210,674,997	179,883,776	155,723,491	177,934,504	
Per cent freight car-miles to total in mixed trains	78.01	77.44	77.82	78.19	78.36	
Per cent passenger car-miles to total in mixed trains	21.99	22.56	22.18	21.81	21.64	
Per cent freight car-miles to total special trains	72.30	62.02	36.31	69.44	[1]	
Per cent passenger car-miles to total in special trains	27.70	37.98	63.69	30.56		

[1] For years prior to 1915 "Mixed-train car-miles" are included in the respective classes of freight-train and passenger-train car-miles.
[2] Not available.
[4] Includes 9,728 unclassified.
[5] Includes 6,999 unclassified.
[7] Includes 10,137,677 unclassified.

Digitized by Google

TABLE B31.—*Statement showing the number of home cars on home roads and the percentage of home cars on home roads to the total number owned Class I railroads.*

[Compiled by American Railway Association, Car Service Division.]

	1907		1908		1909	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
January	(1)	.....	1,474,866	71.0	1,477,866	71.0
February	(1)	.....	1,532,039	74.0	1,486,404	72.0
March	(1)	.....	1,544,993	74.0	1,481,505	72.0
April	1,014,539	54.0	1,620,203	78.0	1,489,056	72.0
May	1,070,019	55.0	1,623,820	78.0	1,528,203	74.0
June	1,114,044	57.0	1,620,479	78.0	1,548,577	75.0
July	1,178,173	60.0	1,609,059	77.0	1,531,253	74.0
August	1,222,094	62.0	1,586,002	76.0	1,452,213	71.0
September	1,211,685	60.0	1,524,252	73.0	1,365,450	67.0
October	1,163,463	58.0	1,439,068	69.0	1,250,029	61.0
November	1,160,438	58.0	1,413,050	68.0	1,187,483	57.0
December	1,286,576	64.0	1,431,032	69.0	1,149,954	56.0

	1910		1911		1912	
January	1,154,393	57.0	1,265,081	58.0	1,154,711	58.0
February	1,123,940	55.0	1,341,161	61.0	1,068,049	54.0
March	1,120,176	54.0	1,377,893	63.0	993,639	50.0
April	1,157,067	56.0	1,398,137	65.0	1,047,174	53.0
May	1,237,344	58.0	1,443,812	66.0	1,136,802	57.0
June	1,271,692	62.0	1,347,948	69.0	1,166,761	58.0
July	1,366,507	64.0	1,362,009	69.0	1,144,686	58.0
August	1,316,334	64.0	1,326,999	67.0	1,235,329	56.0
September	1,285,280	60.0	1,252,302	64.0	1,164,646	53.0
October	1,213,604	57.0	1,163,013	58.0	1,111,570	50.0
November	1,167,355	55.0	1,100,088	56.0	1,074,259	48.0
December	1,196,777	55.0	1,101,557	56.0	1,063,053	48.0

	1913		1914		1915	
January	1,093,008	51.0	1,439,257	62.0	(1)	.....
February	1,146,472	52.0	1,458,666	63.0	(1)	.....
March	1,156,312	53.0	1,455,717	62.0	(1)	.....
April	1,224,903	54.0	1,522,395	64.0	(1)	.....
May	1,259,448	56.0	1,586,614	68.0	(1)	.....
June	1,310,970	58.0	1,608,471	69.0	(1)	.....
July	1,315,482	59.0	1,609,067	68.0	(1)	.....
August	1,361,220	59.0	1,606,232	66.0	(1)	.....
September	1,309,114	58.0	1,550,840	64.0	(1)	.....
October	1,268,488	55.0	1,510,402	63.0	(1)	.....
November	1,249,386	54.0	(1)	.....	1,257,049	57.0
December	1,300,040	56.0	(1)	.....	1,247,129	55.0

	1916		1917		1918	
January	1,197,515	52.0	1,130,180	47.0	1,118,856	45.0
February	1,185,159	52.0	1,166,495	48.0	1,007,963	41.0
March	1,143,098	50.0	1,161,785	48.0	941,399	38.0
April	1,076,216	50.9	1,266,196	52.0	881,373	35.0
May	1,125,411	50.0	1,296,600	53.0	833,649	33.0
June	1,190,183	52.0	1,285,231	52.0	714,795	31.5
July	1,260,704	55.0	1,288,210	52.0	722,084	31.7
August	1,226,228	54.0	1,262,164	52.0	681,407	30.0
September	1,163,298	52.0	1,256,138	51.0	671,107	29.6
October	1,075,281	47.0	1,243,111	50.0	637,589	28.1
November	925,873	44.0	1,207,156	49.0	615,956	27.2
December	1,049,403	44.0	1,199,128	48.0	591,303	26.1

	1919		1920		1921	
January	603,347	26.6	532,947	23.0	1,058,288	45.2
February	610,504	26.8	515,931	22.3	1,502,280	64.1
March	632,346	27.7	507,889	21.9	1,603,935	68.4
April	648,355	28.4	559,977	24.1	1,684,621	71.8
May	672,213	29.4	599,284	25.9	1,706,256	72.8
June	690,177	30.3	610,159	25.9	1,715,271	73.1
July	728,067	31.7	615,792	26.0	1,733,631	74.0
August	709,058	31.2	631,639	26.7	1,676,385	71.6
September	677,601	29.7	660,623	28.0	1,638,906	70.0
October	641,300	27.9	705,666	30.0	1,543,872	66.0
November	607,569	26.3	735,589	31.3	1,496,753	64.1
December	583,699	25.3	833,887	35.5	1,693,066	72.6

[1] Figures not available.

Digitized by Google

[Excludes switching and terminal companies.]

Item.	Fiscal years ended June 30—					
	1911	1912	1913	1914	1915	1916
Locomotive mileage:						
Freight—						
Principal	(1)	(1)	(1)	(1)	539,871,675	598,015,896
Helper	(1)	(1)	(1)	(1)	44,886,328	53,393,027
Light	(1)	(1)	(1)	(1)	28,318,308	34,018,390
Total freight	694,054,825	683,072,271	723,609,962	678,776,684	[2] 614,013,463	685,427,313
Passenger—						
Principal	(1)	(1)	(1)	(1)	543,118,999	552,214,681
Helper	(1)	(1)	(1)	(1)	7,873,338	10,169,488
Light	(1)	(1)	(1)	(1)	13,027,808	14,682,059
Total passenger	569,292,711	582,800,390	594,113,982	601,322,506	[3] 565,233,212	577,066,228
Mixed-train—						
Principal	(1)	(1)	(1)	(1)	29,029,604	29,524,692
Helper	(1)	(1)	(1)	(1)	178,057	204,305
Light	(1)	(1)	(1)	(1)	433,024	473,879
Total mixed-train	28,119,326	28,558,666	29,064,824	28,929,945	[4] 29,856,643	30,202,876
Special—						
Principal	(1)	(1)	(1)	(1)	912,132	1,126,661
Helper	(1)	(1)	(1)	(1)	23,409	47,801
Light	(1)	(1)	(1)	(1)	52,834	64,989
Total special	1,576,003	1,491,967	1,481,297	1,208,513	988,375	1,239,451
Train switching					35,937,159	47,112,152
Yard switching—						
Freight	304,131,803	309,287,773	338,368,048	329,219,050	252,134,398	295,618,372
Passenger					18,938,024	20,019,518
Total yard switching					[5] 274,842,775	[6] 318,046,078
Total transportation service	1,597,174,668	1,605,211,067	1,686,638,113	1,639,456,698	1,520,871,627	1,659,094,098
Work service	62,892,661	61,387,076	70,332,523	64,451,050	43,490,568	50,646,041

[1] Not available.
[2] Includes 937,152 unclassified.
[3] Includes 1,213,067 unclassified.
[4] Includes 215,958 unclassified.
[5] Includes 3,770,353.
[6] Includes 2,408,188 unclassified.

Digitized by Google

TABLE B32.—*Locomotive mileage and train mileage of Class I railroads, 1911 to 1920*—Continued.

Item.	Fiscal years ended June 30—					
	1911	1912	1913	1914	1915	1916
Proportion of mixed-train locomotive-miles applicable to freight service [12]	21,918,312	22,311,524	22,752,261	22,682,226	23,405,263	23,833,584
Proportion of mixed-train locomotive-miles applicable to passenger service [12]	6,201,014	6,247,142	6,312,563	6,247,719	6,451,380	6,369,292
Proportion of special-train locomotive-miles applicable to freight service [12]	879,737	844,149	874,703	747,305	697,333	944,290
Proportion of special-train locomotive-miles applicable to passenger service [12]	696,266	647,818	606,594	461,208	290,542	295,161
Freight locomotive-miles (including proportion of mixed and special)	716,852,874	706,227,944	747,236,926	702,206,215	638,116,559	710,205,137
Passenger locomotive-miles (including proportion of mixed and special)	576,189,991	589,695,350	601,033,139	608,031,433	571,975,134	583,730,681
Switching locomotive-miles (yard plus train)	304,131,803	309,287,773	338,368,048	329,219,050	310,779,934	365,158,290
Train mileage:						
Freight—						
Ordinary	(1)	(1)	(1)	(1)	528,930,411	585,437,450
Light	(1)	(1)	(1)	(1)	6,731,330	8,686,641
Total	608,678,284	594,658,218	628,319,136	590,833,907	[13] 587,804,330	594,124,091
Passenger	548,279,061	560,877,744	572,503,969	580,792,214	558,118,331	569,295,585
Mixed	27,250,843	27,502,475	28,041,285	27,756,676	28,438,600	29,380,218
Special	1,423,941	1,310,180	1,322,258	1,108,510	1,300,579	1,089,458
Total transportation service train-miles	1,185,632,129	1,184,348,617	1,230,186,648	1,200,491,307	1,125,662,340	1,193,889,352
Work service train-miles	48,714,170	46,501,909	54,764,838	49,999,046	34,574,797	42,476,503
Proportion of mixed train-miles applicable to freight service [12]	21,231,426	21,475,006	21,941,214	21,754,715	22,277,781	23,177,799
Proportion of mixed train-miles applicable to passenger service [12]	6,019,417	6,027,469	6,100,071	6,001,961	6,160,819	6,202,419
Proportion of special train-miles applicable to freight service [12]	792,099	740,476	781,890	684,176	911,371	880,429
Proportion of special train-miles applicable to passenger service [12]	631,842	569,704	540,368	424,334	389,208	259,029
Freight train-miles (including proportion of mixed and special)	630,701,809	616,873,700	651,042,240	613,272,798	560,993,982	618,132,319
Passenger train-miles (including proportion of mixed and special)	554,930,320	567,474,917	579,144,408	587,218,509	564,668,358	575,757,083

[7] Includes 2,452,718 unclassified.
[8] Includes 3,135,148 unclassified.
[9] Includes 3,213,160 unclassified.
[10] Includes 2,247,590 unclassified.
[11] Includes 3,199,175 unclassified.
[12] Based on ratio of freight or passenger car-miles in mixed and special trains.
[13] Includes 2,143,089 unclassified.

Digitized by Google

Item.	1916	1917	1918	1919	1920
Locomotive mileage:					
Freight—					
Principal	620,928,433	635,071,656	620,358,223	551,853,524	(1)
Helper	53,868,047	54,855,497	55,077,681	41,972,668	(1)
Light	36,911,132	37,051,731	36,755,859	33,033,005	(1)
Total freight	711,707,612	726,978,884	712,191,763	626,859,197	690,808,212
Passenger—					
Principal	558,978,956	558,490,408	514,602,854	524,620,979	(1)
Helper	10,226,847	11,839,774	10,013,489	10,454,934	(1)
Light	15,263,063	15,404,580	14,036,756	15,515,189	(1)
Total passenger	584,468,866	585,734,762	538,653,099	550,591,102	572,852,229
Mixed-train—					
Principal	29,372,109	29,320,736	28,980,598	27,765,892	(1)
Helper	284,134	263,644	262,750	185,006	(1)
Light	548,467	499,194	538,850	588,546	(1)
Total mixed-train	30,204,710	30,083,574	29,782,198	28,539,444	27,558,348
Special—					
Principal	1,143,038	1,216,357	1,344,964	705,434	(1)
Helper	50,817	46,066	66,224	23,871	(1)
Light	62,692	66,352	49,744	40,516	(1)
Total special	1,256,547	1,328,775	1,460,932	769,821	738,128
Train switching	50,375,721	51,017,816	48,475,792	46,179,732	51,073,297
Yard switching—					
Freight	318,594,943	335,054,089	339,991,696	291,205,178	324,429,432
Passenger	20,564,684	22,901,684	24,397,095	23,291,418	29,318,168
Total yard switching	[7] 341,612,345	[8] 361,090,921	[9] 367,601,951	[10] 316,744,186	[11] 356,946,765
Total transportation service	1,719,625,801	1,756,234,732	1,698,165,735	1,569,683,482	1,699,976,979
Work service	56,310,680	53,940,272	55,037,699	46,463,916	51,041,780
Proportion of mixed-train locomotive-miles applicable to freight service [12]	23,513,741	23,217,115	23,111,399	22,251,530	21,523,872
Proportion of mixed-train locomotive-miles applicable to passenger service [12]	6,690,969	6,866,459	6,670,799	6,287,914	6,034,476
Proportion of special-train locomotive-miles applicable to freight service [12]	908,832	825,511	531,006	535,669	514,981
Proportion of special-train locomotive-miles applicable to passenger service [12]	347,715	508,264	929,926	234,152	223,147

Digitized by Google

TABLE B32.—*Locomotive mileage and train mileage of Class I railroads, 1911 to 1920*—Continued.

Item.	Calendar years ended Dec. 31—				
	1916	1917	1918	1919	1920
Freight locomotive-miles (including proportion of mixed and special)	736,130,185	751,021,510	735,834,168	649,646,396	712,847,065
Passenger locomotive-miles (including proportion of mixed and special)	591,507,550	593,104,485	546,253,824	557,113,168	579,109,852
Switching locomotive-miles (yard plus train)	391,988,066	412,108,737	416,077,743	362,923,918	408,020,062
Train mileage:					
Freight—					
Ordinary	608,199,718	620,875,219	603,074,559	539,332,963	594,360,931
Light	9,406,505	10,312,637	13,076,857	10,324,109	13,147,181
Total	617,606,223	631,187,856	616,151,416	549,657,072	607,508,112
Passenger	576,094,139	575,500,297	529,443,568	539,803,363	560,498,342
Mixed	29,336,400	29,241,908	28,855,569	27,733,153	26,785,920
Special	1,131,804	1,207,571	1,332,238	700,118	691,890
Total transportation service train-miles	1,224,168,566	1,237,137,632	1,175,782,791	1,117,893,706	1,195,484,264
Work service train-miles	46,728,640	44,737,643	45,039,419	36,705,124	41,490,397
Proportion of mixed train-miles applicable to freight service [12]	22,832,695	22,560,808	22,384,592	21,618,051	20,918,747
Proportion of mixed train-miles applicable to passenger service [12]	6,503,705	6,681,100	6,470,977	6,115,102	5,867,173
Proportion of special train-miles applicable to freight service [12]	818,634	750,544	475,208	488,005	483,453
Proportion of special train-miles applicable to passenger service [12]	313,170	457,027	857,030	212,113	208,437
Freight train-miles (including proportion of mixed and special)	641,257,552	654,499,208	639,011,216	571,763,128	628,910,312
Passenger train-miles (including proportion of mixed and special)	582,911,014	582,638,424	536,771,575	546,130,578	566,573,952

[12] Based on ratio of freight or passenger car-miles in mixed and special trains.

Digitized by Google

TABLE [illegible]. Per cent of annual increase and increase over 1911 and 1916 locomotive and train mileage of Class I railroads.

	Fiscal year ending June 30—										Calendar year ending Dec. 31—									
	1912		1913		1914		1915		1916		1916		1917		1918		1919		1920	
	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.	Annual increase.	Increase over 1911.
Locomotive mileage:																				
Freight—																				
Principal										[2]10.7	[2]3.8	[2]15.0	[2]2.2	[2]17.6	[1][2]2.4	[2]14.9	[1][2]11.1	[2]2.2		
Helper										[2]18.9	[2].8	[2]20.0	[2]1.8	[2]22.2	[2].4	[2]22.7	[1][2]23.8	[1][2]6.5		
Light										[2]20.1	[2]8.5	[2]30.3	[2].3	[2]30.8	[1][2].8	[2]29.7	[1][2]10.2	[2]16.6		
Total freight	[1]1.6	[1]1.6	5.9	4.2	[1]6.2	[1]2.2	[1]9.6	[1]11.6	11.6	[1]1.3	3.8	2.5	2.1	4.7	[1]2.1	2.6	[1]11.9	[1]9.7	10.2	[1]0.5
Passenger total	2.3	2.3	1.9	4.3	1.2	5.6	[1]6.1	[1].7	2.1	1.3	1.2	2.6	.2	2.9	[1]8.1	[1]5.4	2.2	[1]3.3	4.0	.06
Yard switching:																				
Freight	1.6	1.6	9.4	11.2	[1]2.8	8.2	[1]23.5	[1]17.1	17.2	[1]2.8	7.7	4.7	5.1	10.1	1.4	11.8	[1]14.4	[1]4.3	11.4	6.6
Passenger										[2]5.7	[2]2.7	[2]8.5	[2]11.3	[2]20.9	[2]6.5	[2]28.8	[1][2]4.6	[2]23.0	[2]25.8	[2]54.8
Total										[2]15.7	[2]7.4	[2]24.3	[2]5.7	[2]31.0	[2]1.8	[2]33.7	[1][2]13.9	[2]15.2	[2]12.6	[2]29.8
Train mileage:																				
Freight—																				
Ordinary										[2]10.7	[2]3.8	[2]15.0	[2]2.1	[2]17.4	[1][2]2.9	[2]14.0	[1][2]10.6	[2]2.0	[2]10.2	[2]12.3
Light										[2]29.0	[2]8.3	[2]39.7	[2]9.6	[2]53.2	[2]26.8	[2]94.2	[1][2]21.1	[2]53.3	[2]27.3	[2]95.3
Total freight train miles	[1]2.4	[1]2.3	5.6	3.2	[1]5.9	[1]3.0	[1]8.9	[1]11.7	10.6	[1]2.4	3.9	1.4	2.2	3.6	[1]2.4	1.2	[1]10.8	[1]9.7	10.5	1.2
Passenger	2.3	2.3	2.1	4.4	1.4	5.9	[1]3.9	1.8	2.0	3.8	1.2	5.1	1.2	4.9	[1]8.1	[1]3.5	1.9	[1]1.6	3.8	2.2
Mixed	.9	.9	1.9	2.9	[1]1.1	1.8	2.4	4.3	3.3	7.8	1.2	7.6	1.4	7.3	[1]1.4	5.9	[1]3.9	1.8	[1]3.5	[1]1.7
Special	[1]8.0	[1]8.0	.9	[1]7.2	[1]16.2	[1]22.2	17.3	[1]8.7	[1]16.3	[1]23.5	3.8	[1]20.5	6.6	[1]15.2	10.3	[1]6.5	[1]47.5	[1]50.9	[1]1.2	[1]51.4
Total transportation miles	[1].2	[1].2	3.8	3.7	[1]2.4	1.2	[1]6.3	[1]5.1	6.0	.7	2.5	3.2	1.0	4.3	[1]5.0	[1].9	[1]4.9	[1]5.7	6.9	[1].8

[1] Denotes decrease.

[2] Percentage is based on 1915.

Digitized by Google

TABLE B34.—*Train-miles, ton-miles, passenger-miles—Per cent of annual increase and increase over 1911.*

	Freight train-miles, including a portion of mixed and special.			Passenger train-miles, including a portion of mixed and special.			Total train-miles, excluding work service.			Net ton-miles.		
	Number.	Annual increase.	Increase over 1911.	Number.	Annual increase.	Increase over 1911.	Number.	Annual increase.	Increase over 1911.	Number.	Annual increase.	Increase over 1911.
All roads:												
1890												
1900	515,587,117			371,194,473			886,781,590					
1910	663,490,903			558,361,744			1,221,852,647					
Class I roads:												
Fiscal—												
1911	630,701,809			554,930,320			1,185,632,129			275,302,166,302		
1912	616,873,700	[1] 2.2	[1] 2.2	567,474,917	2.2	2.2	1,184,348,617	[1] .2	[1] .2	286,473,628,198	4.0	4.0
1913	651,042,240	5.5	3.2	579,144,408	2.0	4.3	1,230,186,648	3.8	3.7	328,059,528,693	14.5	19.1
1914	613,272,798	[1] 5.8	[1] 2.2	587,215,509	1.3	5.6	1,200,491,307	[1] 2.5	1.2	313,957,749,718	[1] 4.3	14.0
1915	560,993,982	[1] 8.6	[1] 11.6	564,668,358	[1] 3.9	[1] .7	1,125,662,340	[1] 6.2	[1] 5.1	302,786,500,454	[1] 3.6	9.9
1916	618,132,319	10.2	[1] 1.3	575,757,033	1.9	1.3	1,193,889,352	6.0	.7	373,516,310,356	23.3	35.6
Calendar—												
1916	641,257,552	3.7	2.5	582,911,014	1.2	2.6	1,224,168,566	2.5	3.2	396,365,917,082	6.1	43.9
1917	654,499,208	2.0	4.7	582,638,424	[1] .1	2.9	1,237,137,632	1.0	4.3	430,319,014,635	8.5	56.3
1918	639,011,216	[1] 2.4	2.6	536,771,575	[1] 8.9	[1] 5.4	1,175,782,791	[1] 4.8	[1] .9	440,701,713,665	2.2	59.8
1919	571,763,128	[1] 10.6	[1] 9.7	546,130,578	1.7	[1] 3.3	1,117,893,706	[1] .5	[1] 5.7	395,679,051,729	[1] 10.1	43.7
1920	628,910,312	10.0	[1] .5	566,573,952	3.7	.1	1,195,484,264	6.9	[1] .8	447,278,128,869	13.0	62.4

[1] Denotes decrease.

Digitized by Google

	Revenue ton-miles.			Revenue passenger-miles.			Net tons per train.			Revenue tons per train.			Passengers per train.		
	Number.	Annual increase.	Increase over 1911.	Number.	Annual increase.	Increase over 1911.	Number.	Increase.	Over 1911.	Number.	Increase.	Over 1911.	Number.	Increase.	Over 1911.
All roads:															
1890	76,207,047,298			11,847,785,617						274.64			43.21		
1900	141,599,157,270			16,039,007,217						384.36			57.92		
1910	255,016,910,451			32,338,196,329											
Class I roads:															
Fiscal—															
1911	249,843,166,102			32,371,444,793			436.50			396.14			58.33		
1912	259,981,628,198	4.1	4.1	32,316,262,549	[1].18	[1].18	464.40	6.3	6.3	421.45	6.4	6.4	56.95	[1]2.4	[1]2.4
1913	297,722,528,693	14.5	19.2	33,875,085,958	4.8	4.6	503.90	8.5	15.4	457.30	8.5	15.4	58.49	2.7	.3
1914	284,924,749,718	[1]4.3	14.0	34,566,985,414	2.0	6.8	511.94	1.6	17.2	464.60	1.5	17.3	58.87	.6	.9
1915	273,913,006,569	[1]3.9	9.6	31,789,928,187	[1]8.0	[1]1.8	539.73	5.4	23.6	488.26	5.0	23.2	56.30	[1]4.4	[1]3.5
1916	339,870,323,675	24.6	36.0	33,645,908,150	5.8	3.9	604.27	11.9	38.4	549.83	12.6	38.7	58.44	3.8	.2
Calendar—															
1916	362,444,397,129	6.6	45.0	34,585,952,026	2.8	6.8	618.11	2.2	41.6	565.21	2.8	42.6	59.32	1.5	1.6
1917	394,465,400,493	8.8	57.9	39,476,858,549	8.1	21.9	657.48	6.3	50.6	602.70	6.6	52.1	67.76	14.2	16.1
1918	405,379,284,206	2.8	62.2	42,676,579,199	8.1	31.8	688.57	4.7	57.7	634.39	5.2	60.1	79.51	17.3	36.3
1919	364,293,063,017	[1]10.1	45.8	46,358,303,740	8.6	43.2	692.03	0.5	58.5	627.14	[1]1.2	58.3	84.89	6.7	45.5
1920	410,306,206,802	12.6	64.2	46,848,667,987	5.4	44.7	711.20	2.7	62.9	652.41	4.0	64.6	82.69	[1]2.6	41.7

Digitized by Google

TABLE B35.—*Statement showing the gross, net, and tare ton-miles—Class I railroads.*

	Gross ton-miles, exclusive locomotive and tender.	Net ton-miles.	Tare ton-miles.
Year ended June 30—			
1911	**598,299,000,000**	**275,302,166,302**	**322,996,833,698**
1912	**621,583,000,000**	**286,473,628,198**	**335,109,371,802**
1913	**701,816,000,000**	**328,059,528,693**	**373,756,471,307**
1914	**693,846,000,000**	**313,957,749,718**	**379,888,252,282**
1915	**674,184,000,000**	**302,786,500,454**	**371,397,499,546**
1916	**792,033,000,000**	**373,516,310,356**	**418,516,689,644**
Year ended Dec. 31—			
1916	**826,765,000,000**	**396,365,917,082**	**430,399,082,918**
1917	**873,656,000,000**	**430,319,014,635**	**443,336,985,365**
1918	**884,764,000,000**	**440,001,713,665**	**444,762,286,335**
1919	**821,699,066,000**	**395,679,051,729**	**426,020,014,271**
1920	**914,224,232,000**	**447,278,126,869**	**466,936,105,131**
1921	**759,568,000,000**	**344,343,000,000**	**415,225,000,000**
1919.			
January	62,316,954,000	30,352,685,000	31,964,269,000
February	53,388,514,000	25,625,783,000	27,762,731,000
March	60,815,517,000	29,122,675,000	31,692,842,000
April	60,528,059,000	28,799,160,000	31,728,899,000
May	68,179,364,000	32,567,778,000	35,611,586,000
June	67,248,505,000	32,271,423,000	34,977,082,000
July	72,934,946,000	35,214,224,000	37,720,722,000
August	74,631,118,000	36,525,943,000	38,105,175,000
September	79,566,120,000	39,015,351,000	40,550,769,000
October	83,739,891,000	40,549,232,000	43,190,659,000
November	69,015,215,000	32,750,629,000	36,264,586,000
December	68,907,693,000	33,808,668,000	35,299,025,000
1920.			
January	70,050,394,000	34,764,807,000	35,285,587,000
February	65,405,540,000	32,695,352,000	32,810,188,000
March	76,001,513,000	37,991,269,000	39,010,244,000
April	58,664,997,000	28,530,657,000	30,134,340,000
May	76,626,937,000	37,902,007,000	38,724,930,000
June	77,419,649,000	38,157,869,000	39,261,780,000
July	81,938,154,000	40,450,094,000	41,488,060,000
August	86,044,230,000	42,706,838,000	43,337,392,000
September	83,105,782,000	40,999,843,000	42,105,939,000
October	87,214,678,000	42,562,687,000	44,651,991,000
November	77,577,267,000	37,458,630,000	40,119,637,000
December	72,792,726,000	34,722,365,000	38,070,361,000
1921.			
January	65,400,391,000	29,824,391,000	35,576,000,000
February	54,773,784,000	24,913,294,000	29,860,490,000
March	59,407,660,000	26,825,588,000	32,582,072,000
April	56,597,477,000	25,578,883,000	31,018,594,000
May	61,653,917,000	28,218,768,000	33,435,149,000
June	61,831,294,000	28,140,661,000	33,690,633,000
July	62,771,286,000	28,412,404,000	34,364,882,000
August	66,773,504,000	30,381,958,000	36,391,546,000
September	67,519,696,000	30,821,944,000	36,697,752,000
October	79,420,936,000	36,506,565,000	42,914,371,000
November	65,996,908,000	29,139,115,000	36,857,793,000
December	57,797,000,000	25,706,000,000	32,091,000,000

Digitized by Google

TABLE B37—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21.*

[000 omitted.]

Roads.	January.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
hicago & North Western:					
1920	20,366	14,748	26,189	5,823	8,947
1921	17,973	10,376	25,749	7,776	15,476
reat Northern:					
1920	15,604	10,889	18,571	2,967	6,322
1921	8,049	5,925	10,836	2,787	4,362
linneapolis, St. Paul & Sault Ste. Marie:					
1920	7,292	6,206	8,704	1,412	1,725
1921	5,750	3,570	7,598	1,843	3,610
outhern Pacific:					
1920	18,470	15,483	24,557	6,087	7,737
1921	12,118	12,216	21,934	9,816	7,709
lissouri, Kansas & Texas:					
1920	3,330	3,238	5,287	1,957	2,092
1921	3,250	2,761	5,713	2,498	3,502
lissouri Pacific:					
1920	14,433	13,376	18,517	4,084	4,344
1921	11,443	11,767	18,703	7,260	7,237
Total:					
1920	69,495	63,940	101,825	22,330	31,167
1921	58,583	46,615	90,528	31,980	41,8.6
elaware, Lackawanna & Western:					
1920	8,695	5,748	9,916	1,221	4,532
1921	8,272	4,858	10,320	2,048	5,338
rie:					
1920	19,172	11,601	21,203	2,031	11,185
1921	16,803	9,492	22,710	5,907	12,679
ew York Central:					
1920	40,319	25,562	48,040	7,721	18,606
1921	38,264	17,031	53,573	15,309	36,116
altimore & Ohio:					
1920	29,649	19,277	37,192	7,543	16,744
1921	26,542	13,371	37,545	11,003	24,628
leveland, Cincinnati, Chicago & St. Louis:					
1920	12,518	7,836	14,731	2,213	6,431
1921	10,816	5,622	15,827	5,011	10,078
ennsylvania:					
1920	68,332	43,321	83,579	15,247	37,950
1921	65,371	34,891	90,023	24,652	53,349
Total:					
1920	178,685	113,345	214,661	35,976	95,448
1921	166,068	85,265	229,998	63,930	142,188
hesapeake & Ohio:					
1920	12,336	10,637	19,567	7,231	7,014
1921	10,326	8,517	18,858	8,532	9,030
lorfolk & Western:					
1920	12,644	10,057	17,729	5,085	7,114
1921	11,496	8,256	18,253	6,757	9,434
ouisville & Nashville:					
1920	14,391	12,884	20,293	5,902	6,928
1921	12,349	11,262	19,723	7,374	9,348
outhern:					
1920	20,303	13,201	22,740	2,437	8,043
1921	14,740	7,972	19,026	4,286	9,450
Total:					
1920	59,674	46,779	80,329	20,655	29,099
1921	48,911	36,007	75,860	26,949	37,362

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	February.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	19,647	15,437	25,213	5,566	8,212
1921	15,354	9,411	20,669	5,315	11,507
Great Northern:					
1920	16,086	10,284	19,124	3,038	5,682
1921	8,578	6,212	10,412	1,834	4,117
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	7,175	5,871	8,823	1,648	1,495
1921	4,793	3,586	6,442	1,649	2,289
Southern Pacific:					
1920	16,283	14,152	22,925	6,642	6,097
1921	11,186	11,736	18,087	6,901	6,135
Missouri, Kansas & Texas:					
1920	3,188	3,331	5,853	2,665	1,901
1921	2,696	2,343	4,384	1,688	1,902
Missouri Pacific:					
1920	14,456	12,819	18,315	3,859	4,430
1921	10,309	10,351	15,373	5,064	5,522
Total:					
1920	76,835	61,894	100,253	23,412	27,817
1921	52,916	43,739	75,367	26,983	31,472
Delaware, Lackawanna & Western:					
1920	7,713	5,316	9,097	1,384	3,496
1921	7,463	4,553	9,598	2,135	4,271
Erie:					
1920	17,026	10,839	19,439	2,413	7,689
1921	16,518	7,215	22,186	5,668	11,159
New York Central:					
1920	34,806	23,692	41,203	6,397	16,054
1921	31,870	16,713	43,171	11,301	36,979
Baltimore & Ohio:					
1920	30,364	19,577	36,658	6,294	12,932
1921	20,897	11,805	28,644	7,747	18,490
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	11,813	8,346	13,895	2,062	6,059
1921	8,722	5,057	12,504	3,782	7,803
Pennsylvania:					
1920	62,434	41,172	76,461	12,977	34,177
1921	53,867	29,390	71,170	17,303	41,496
Total:					
1920	164,206	108,942	196,753	31,547	80,406
1921	240,301	74,733	187,273	47,936	120,198
Chesapeake & Ohio:					
1920	12,316	9,956	18,806	6,490	7,058
1921	8,621	6,451	14,804	6,183	6,467
Norfolk & Western:					
1920	11,705	9,122	16,323	4,618	6,251
1921	8,483	5,846	12,953	4,470	5,826
Louisville & Nashville:					
1920	13,904	12,231	19,517	5,613	6,976
1921	11,417	9,531	17,959	6,542	7,723
Southern:					
1920	19,861	12,329	21,621	1,760	7,233
1921	14,576	7,963	17,977	3,401	7,484
Total:					
1920	57,786	43,638	76,267	18,481	27,518
1921	43,097	29,781	63,693	20,596	27,500

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	March.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	21,180	17,540	26,773	5,593	8,914
1921	17,605	11,466	23,813	6,208	12,083
Great Northern:					
1920	16,439	10,379	18,941	2,502	7,036
1921	10,230	7,138	12,287	2,057	4,114
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	7,508	6,268	9,228	1,720	1,071
1921	5,339	4,334	7,443	2,104	2,587
Southern Pacific:					
1920	18,070	16,153	24,634	6,564	6,677
1921	12,942	13,632	20,099	7,157	8,230
Missouri, Kansas & Texas:					
1920	4,007	4,171	7,136	3,129	1,982
1921	3,219	2,488	4,731	1,512	2,150
Missouri Pacific:					
1920	16,515	14,646	20,878	4,363	5,254
1921	11,206	11,570	16,784	5,578	5,900
Total:					
1920	83,719	69,157	107,590	23,871	30,934
1921	60,541	50,628	85,157	24,616	35,064
Delaware, Lackawanna & Western:					
1920	9,726	7,457	10,964	1,238	4,093
1921	8,515	6,345	11,165	2,650	4,642
Erie:					
1920	21,665	14,145	23,378	1,713	9,993
1921	18,691	9,082	22,003	3,312	13,637
New York Central:					
1920	48,145	30,267	56,396	8,251	20,963
1921	35,386	18,311	44,612	9,226	24,209
Baltimore & Ohio:					
1920	34,425	21,100	41,138	6,713	16,571
1921	23,368	13,606	30,639	7,271	18,284
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	13,444	9,537	15,883	2,439	5,968
1921	10,560	5,737	14,579	4,019	8,270
Pennsylvania:					
1920	81,332	52,880	96,042	14,710	43,162
1921	60,757	32,859	76,011	15,254	43,151
Total:					
1920	208,737	135,386	243,801	35,064	100,750
1921	157,277	85,940	199,009	41,732	112,193
Chesapeake & Ohio:					
1920	14,629	11,355	21,866	7,237	8,748
1921	9,044	8,349	15,721	6,677	6,755
Norfolk & Western:					
1920	12,096	10,304	17,821	5,725	7,956
1921	9,466	6,206	13,364	3,898	6,893
Louisville & Nashville:					
1920	15,010	13,258	19,944	4,934	6,291
1921	13,504	9,900	20,115	6,611	9,195
Southern:					
1920	22,140	13,801	24,569	2,429	8,163
1921	15,970	8,906	19,251	3,281	7,962
Total:					
1920	63,875	48,718	84,200	20,325	31,158
1921	47,984	33,361	68,451	20,467	30,805

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21.*

Roads.	April.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	15,191	13,635	21,153	5,962	7,774
1921	14,301	10,441	19,745	5,444	8,757
Great Northern:					
1920	17,957	9,417	20,227	2,270	6,541
1921	10,227	6,110	12,375	2,148	4,603
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	6,354	5,330	8,130	1,796	1,328
1921	4,364	4,227	6,368	2,004	1,940
Southern Pacific:					
1920	10,378	10,420	14,686	4,308	4,804
1921	11,982	13,512	18,873	6,891	8,377
Missouri, Kansas & Texas:					
1920	3,684	2,711	5,611	1,927	1,917
1921	3,331	2,203	4,393	1,062	2,388
Missouri Pacific:					
1920	11,487	10,351	15,038	3,551	4,626
1921	11,257	11,213	15,889	4,632	5,794
Total:					
1920	64,051	51,864	84,845	19,814	35,747
1921	55,462	47,706	77,643	22,181	31,859
Delaware, Lackawanna & Western:					
1920	4,445	3,506	5,586	1,141	2,545
1921	8,782	6,028	11,209	2,427	4,785
Erie:					
1920	10,748	8,308	12,116	1,368	6,440
1921	15,944	9,165	18,577	2,633	9,940
New York Central:					
1920	34,675	19,336	40,987	6,312	26,148
1921	33,269	18,151	40,797	7,528	21,998
Baltimore & Ohio:					
1920	22,210	13,963	26,589	4,379	14,158
1921	23,378	13,537	29,659	6,281	17,309
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	7,815	4,811	9,445	1,630	4,824
1921	9,578	5,506	12,871	3,293	7,998
Pennsylvania:					
1920	56,053	32,499	65,764	9,711	36,775
1921	55,628	31,290	68,944	13,316	37,931
Total:					
1920	135,946	82,423	160,487	24,541	90,890
1921	146,579	83,677	182,057	35,478	99,961
Chesapeake & Ohio:					
1920	14,864	7,387	19,292	4,428	10,492
1921	9,126	9,163	16,324	7,198	7,030
Norfolk & Western:					
1920	11,352	5,874	14,473	3,121	7,702
1921	9,356	7,116	13,374	4,018	6,637
Louisville & Nashville:					
1920	12,406	11,825	18,713	6,307	6,444
1921	13,495	9,653	19,707	6,212	9,282
Southern:					
1920	17,710	14,845	21,409	3,690	8,827
1921	15,293	8,640	18,516	3,223	8,384
Total:					
1920	56,332	39,931	73,887	17,546	33,465
1921	47,270	34,572	67,921	20,651	31,333

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	May.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	21,386	16,941	29,604	8,218	10,277
1921	14,700	10,776	19,976	5,276	8,416
Great Northern:					
1920	17,859	10,216	19,969	2,118	8,365
1921	12,065	6,227	14,330	2,295	7,596
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	6,888	6,133	8,796	1,908	1,690
1921	4,261	4,227	6,185	1,968	1,754
Southern Pacific:					
1920	18,697	16,916	23,871	5,174	8,029
1921	14,587	14,014	20,966	6,379	8,790
Missouri, Kansas & Texas:					
1920	5,722	3,659	7,667	4,001	1,125
1921	3,779	2,356	4,996	1,217	2,844
Missouri Pacific:					
1920	16,510	14,064	20,370	3,860	5,508
1921	12,922	11,460	17,621	4,699	6,161
Total:					
1920	87,062	67,929	110,277	25,279	35,002
1921	62,334	49,060	84,074	21,824	35,561
Delaware, Lackawanna & Western:					
1920	7,101	5,602	8,552	1,451	3,589
1921	8,737	6,021	11,256	2,519	4,794
Erie:					
1920	19,721	15,067	21,271	6,204	5,544
1921	16,599	10,657	19,642	3,043	9,950
New York Central:					
1920	47,418	28,816	53,549	6,131	28,732
1921	35,481	19,021	42,772	7,291	24,616
Baltimore & Ohio:					
1920	34,880	22,773	40,375	5,495	17,927
1921	24,395	14,513	31,912	7,517	18,969
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	13,040	6,843	15,404	2,356	6,332
1921	10,114	6,173	13,823	3,709	9,290
Pennsylvania:					
1920	79,309	47,992	88,945	9,636	46,454
1921	60,297	35,412	75,992	15,695	43,682
Total:					
1920	201,469	127,093	228,096	31,273	108,578
1921	155,623	91,797	195,397	39,774	111,301
Chesapeake & Ohio:					
1920	15,805	10,581	20,896	5,091	10,149
1921	11,948	10,811	19,948	8,000	9,068
Norfolk & Western:					
1920	14,244	8,954	17,794	3,550	8,488
1921	11,836	8,642	17,866	6,030	9,512
Louisville & Nashville:					
1920	15,943	12,835	22,912	6,969	7,565
1921	15,123	10,446	21,811	6,688	11,433
Southern:					
1920	21,627	15,524	24,393	2,766	10,265
1921	15,326	8,509	18,549	3,223	11,818
Total:					
1920	67,619	47,894	85,995	18,376	36,467
1921	54,233	38,408	78,174	23,941	41,821

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	June.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	21,083	16,432	29,246	8,163	10,899
1921	16,150	11,177	21,231	5,081	10,569
Great Northern:					
1920	16,977	9,801	19,526	2,549	8,441
1921	12,522	6,224	14,759	2,237	8,654
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	6,255	5,844	8,318	2,063	2,063
1921	4,354	4,117	5,850	1,496	1,779
Southern Pacific:					
1920	20,647	16,026	25,884	5,237	9,345
1921	18,970	13,794	25,227	6,257	10,155
Missouri, Kansas & Texas:					
1920	5,689	3,341	8,230	2,541	3,529
1921	3,716	2,090	4,701	985	2,784
Missouri Pacific:					
1920	15,330	12,850	19,410	4,080	6,176
1921	11,645	11,324	17,571	5,926	6,317
Total:					
1920	85,981	64,294	110,614	24,633	40,434
1921	67,357	48,726	89,339	21,982	40,258
Delaware, Lackawanna & Western:					
1920	9,944	6,911	11,903	1,959	5,040
1921	8,361	6,490	11,193	2,832	4,481
Erie:					
1920	21,390	15,875	22,970	1,580	12,543
1921	16,721	9,123	19,710	2,989	10,196
New York Central:					
1920	47,635	25,763	55,078	7,443	29,095
1921	34,758	18,066	41,132	6,374	27,033
Baltimore & Ohio:					
1920	30,019	19,355	36,773	6,754	16,835
1921	25,570	14,258	32,701	7,131	20,327
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	13,749	6,741	16,438	2,689	7,150
1921	9,332	5,880	13,146	3,754	8,079
Pennsylvania:					
1920	83,109	50,507	94,397	1,288	48,533
1921	64,150	37,033	80,594	6,444	47,525
Total:					
1920	205,846	125,152	237,559	31,713	119,196
1921	158,952	90,850	198,476	30,524	117,641
Chesapeake & Ohio:					
1920	14,830	10,651	21,161	6,331	9,843
1921	13,633	10,582	22,412	8,779	10,357
Norfolk & Western:					
1920	15,103	10,153	19,552	4,449	8,483
1921	11,960	9,321	19,068	7,098	8,626
Louisville & Nashville:					
1920	16,173	12,452	22,287	6,114	8,452
1921	15,772	10,297	21,982	6,210	11,598
Southern:					
1920	21,216	14,085	24,030	2,814	9,658
1921	16,146	8,317	18,886	2,740	10,797
Total:					
1920	67,322	47,341	87,030	19,708	36,436
1921	57,511	38,517	82,338	24,827	41,378

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21.*

Roads.	July.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	21,741	17,718	29,745	8,004	12,028
1921	16,572	11,422	22,543	5,971	13,297
Great Northern:					
1920	17,117	10,054	19,787	2,670	11,555
1921	11,003	6,744	13,000	1,997	7,742
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	6,363	5,994	8,523	2,160	2,565
1921	4,160	4,419	5,766	1,606	2,630
Southern Pacific:					
1920	20,135	16,609	24,631	4,496	11,732
1921	18,076	13,749	23,631	5,555	14,218
Missouri, Kansas & Texas:					
1920	5,870	3,463	7,863	1,993	4,215
1921	4,601	2,237	5,817	1,216	3,375
Missouri Pacific:					
1920	14,998	13,516	19,234	4,236	6,030
1921	13,040	12,232	18,502	5,462	6,197
Total:					
1920	86,224	67,354	109,783	23,559	48,125
1921	67,452	50,803	89,256	21,807	47,459
Delaware, Lackawanna & Western:					
1920	10,657	6,729	12,171	1,514	6,093
1921	8,193	6,490	10,915	2,722	4,340
Erie:					
1920	24,165	13,771	26,366	2,201	15,607
1921	17,626	10,576	21,007	3,381	11,115
New York Central:					
1920	51,009	28,694	59,517	8,508	33,502
1921	34,668	18,020	40,868	6,200	25,376
Baltimore & Ohio:					
1920	34,926	21,317	44,131	9,205	19,257
1921	25,227	14,130	31,468	6,241	19,285
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	13,049	7,631	15,996	2,947	8,175
1921	9,989	5,333	12,754	2,765	7,524
Pennsylvania:					
1920	85,975	53,595	100,765	14,790	52,127
1921	63,565	37,333	78,610	15,045	46,141
Total:					
1920	219,781	131,737	258,946	39,165	134,761
1921	159,268	91,882	195,622	36,354	113,781
Chesapeake & Ohio:					
1920	14,343	11,831	21,611	7,268	9,780
1921	11,383	9,620	19,093	7,710	9,246
Norfolk & Western:					
1920	15,668	10,231	21,039	5,371	9,983
1921	10,398	8,071	16,431	6,033	7,716
Louisville & Nashville:					
1920	17,072	12,465	23,391	6,319	9,214
1921	16,172	10,341	22,408	6,236	10,427
Southern:					
1920	21,890	13,360	24,876	2,986	10,733
1921	17,893	8,459	20,717	2,824	11,607
Total:					
1920	68,973	47,887	90,917	21,944	39,710
1921	55,846	36,491	78,649	22,803	38,996

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	August.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	23,626	16,830	29,926	6,300	14,947
1921	21,021	13,496	27,410	6,389	15,147
Great Northern:					
1920	19,285	10,754	21,899	2,614	17,574
1921	14,675	8,363	17,133	2,458	10,273
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	6,785	6,065	8,504	1,719	3,759
1921	5,339	5,089	7,029	1,690	2,285
Southern Pacific:					
1920	21,965	16,774	26,968	5,003	9,033
1921	17,666	13,769	23,359	5,693	9,777
Missouri, Kansas & Texas:					
1920	5,434	2,807	6,789	1,355	4,099
1921	4,867	2,519	5,998	1,131	3,800
Missouri Pacific:					
1920	14,870	14,751	18,622	3,752	5,998
1921	14,290	12,672	20,573	6,283	10,158
Total:					
1920	91,965	67,981	112,708	20,743	55,410
1921	77,858	55,908	101,502	23,624	51,440
Delaware, Lackawanna & Western:					
1920	11,669	6,854	13,274	1,605	6,158
1921	8,816	7,127	11,444	2,638	4,235
Erie:					
1920	26,088	12,619	28,156	2,068	14,650
1921	19,579	12,103	23,679	4,100	11,108
New York Central:					
1920	53,949	30,063	63,108	9,159	33,278
1921	38,413	20,684	45,120	6,707	28,985
Baltimore & Ohio:					
1920	36,621	23,120	45,272	8,651	23,251
1921	25,349	15,274	32,247	6,898	18,831
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	14,475	7,524	17,328	2,853	7,950
1921	11,068	6,145	13,855	2,787	8,508
Pennsylvania:					
1920	84,793	50,876	101,012	16,219	58,994
1921	63,386	37,547	77,244	13,858	43,495
Total:					
1920	227,595	131,076	268,150	40,555	144,281
1921	166,611	98,880	203,589	36,988	115,162
Chesapeake & Ohio:					
1920	15,182	12,985	23,362	8,180	9,551
1921	8,054	10,419	15,398	7,344	5,857
Norfolk & Western:					
1920	15,339	11,154	20,172	4,833	9,841
1921	9,209	8,955	14,982	5,773	6,268
Louisville & Nashville:					
1920	16,790	13,738	22,519	5,729	9,144
1921	14,294	10,739	20,785	6,491	10,465
Southern:					
1920	19,788	13,638	22,730	2,942	8,732
1921	15,391	9,564	18,355	2,964	9,770
Total:					
1920	67,099	51,515	88,783	21,684	37,268
1921	46,948	39,677	69,520	22,572	32,370

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	September.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	25,135	16,827	31,716	6,581	15,017
1921	21,303	13,057	27,481	6,178	14,757
Great Northern:					
1920	22,600	10,060	25,165	2,565	17,755
1921	17,823	8,319	20,165	2,342	12,763
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	7,196	5,610	8,915	1,719	3,745
1921	6,677	4,621	8,403	1,726	3,358
Southern Pacific:					
1920	21,001	18,036	26,197	5,196	8,691
1921	19,313	13,201	24,382	5,069	9,854
Missouri, Kansas & Texas:					
1920	1,841	3,178	3,371	1,530	1,061
1921	1,716	2,732	3,393	1,677	1,020
Missouri Pacific:					
1920	14,200	13,589	18,364	4,164	6,872
1921	15,707	12,744	20,796	5,089	8,336
Total:					
1920	91,973	67,300	113,728	21,755	53,141
1921	82,539	54,674	104,620	22,080	50,088
Delaware, Lackawanna & Western:					
1920	11,773	5,490	12,939	1,166	6,170
1921	9,773	5,915	11,825	2,052	5,089
Erie:					
1920	25,966	10,555	27,526	1,560	18,791
1921	22,313	11,598	26,747	4,434	12,994
New York Central:					
1920	51,242	25,815	58,528	7,286	38,875
1921	39,040	21,023	45,847	6,807	25,378
Baltimore & Ohio:					
1920	34,281	21,643	41,587	7,306	21,815
1921	25,865	15,454	32,251	6,386	16,670
Cleveland, Cincinnati, Chicago & St. Louis					
1920	13,155	8,132	15,746	2,591	9,554
1921	10,910	6,603	13,913	3,003	8,592
Pennsylvania:					
1920	85,924	48,965	98,590	12,666	52,822
1921	64,621	37,628	77,911	13,290	42,818
Total:					
1920	222,341	120,600	254,916	32,575	148,027
1921	172,522	98,221	508,494	35,972	111,541
Chesapeake & Ohio:					
1920	14,234	12,726	22,931	8,697	9,932
1921	7,709	10,137	15,623	7,914	5,363
Norfolk & Western:					
1920	14,122	10,185	19,052	4,930	10,047
1921	8,759	9,490	15,198	6,439	5,892
Louisville & Nashville:					
1920	14,953	12,894	21,240	6,207	8,517
1921	14,837	11,058	20,630	5,793	10,675
Southern:					
1920	18,167	12,730	21,390	3,223	12,788
1921	15,555	10,414	18,368	2,813	7,735
Total:					
1920	61,476	48,535	84,613	23,057	41,284
1921	46,860	41,099	69,819	22,959	29,665

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21.*

Roads.	October.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty
Chicago & North Western:					
1920	25,858	17,747	32,670	6,812	15,[illegible]
1921	24,593	14,568	31,093	6,500	14,[illegible]
Great Northern:					
1920	25,541	9,785	28,248	2,707	16,[illegible]
1921	27,849	9,332	30,600	2,751	19,[illegible]
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	8,860	6,311	10,958	2,098	4,[illegible]
1921	9,206	5,045	10,764	1,558	3,[illegible]
Southern Pacific:					
1920	21,221	17,292	27,604	6,383	10,[illegible]
1921	21,480	16,673	27,958	6,478	11,[illegible]
Missouri, Kansas & Texas:					
1920	3,863	4,463	6,637	2,774	2,[illegible]
1921	4,691	3,219	5,982	1,291	3,[illegible]
Missouri Pacific:					
1920	16,276	14,549	20,821	4,545	7,[illegible]
1921	17,383	13,658	22,537	5,154	8,[illegible]
Total:					
1920	101,619	70,147	126,938	25,319	58,179
1921	105,202	62,495	128,934	23,732	62,249
Delaware, Lackawanna & Western:					
1920	12,073	6,473	13,864	1,791	7,[illegible]
1921	11,250	6,522	13,329	2,079	6,[illegible]
Erie:					
1920	27,528	12,484	29,304	1,776	19,[illegible]
1921	27,574	13,036	30,963	3,389	17,[illegible]
New York Central:					
1920	52,020	27,158	60,642	8,622	34,[illegible]
1921	45,911	24,290	52,234	6,323	25,[illegible]
Baltimore & Ohio:					
1920	35,972	21,308	43,667	7,695	23,[illegible]
1921	30,130	18,310	36,911	6,781	19,[illegible]
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	12,978	8,090	15,836	2,858	9,[illegible]
1921	12,940	7,534	15,365	2,425	8,[illegible]
Pennsylvania:					
1920	90,438	51,092	105,343	14,905	60,[illegible]
1921	79,208	44,943	93,461	14,253	52,[illegible]
Total:					
1920	231,009	126,605	268,656	37,647	155,[illegible]
1921	207,013	114,635	242,263	35,250	129,[illegible]
Chesapeake & Ohio:					
1920	14,656	12,535	22,496	7,840	10,[illegible]
1921	10,014	13,113	19,086	9,072	7,[illegible]
Norfolk & Western:					
1920	15,249	10,774	20,092	4,843	10,[illegible]
1921	11,547	11,364	19,339	7,792	6,[illegible]
Louisville & Nashville:					
1920	14,792	13,065	21,513	6,721	9,[illegible]
1921	16,283	13,376	23,203	6,920	10,[illegible]
Southern:					
1920	19,244	12,670	22,593	3,349	10,[illegible]
1921	19,116	11,967	21,991	2,875	10,[illegible]
Total:					
1920	63,941	49,044	86,694	22,753	41,[illegible]
1921	56,960	49,820	83,619	26,659	35,[illegible]

Digitized by Google

BLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	November.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
ago & North Western:					
920	20,086	13,901	27,233	7,147	13,442
921	17,282	11,097	23,673	6,391	11,377
t Northern:					
920	20,501	8,662	23,347	2,846	13,770
921	18,924	6,965	21,039	2,115	15,466
ieapolis, St. Paul & Sault Ste. Marie:					
920	8,253	5,666	10,456	2,203	5,985
921	3,841	6,034	6,733	2,892	1,682
hern Pacific:					
920	16,098	15,222	25,056	8,958	7,907
921	14,194	13,970	23,630	9,436	10,625
ouri, Kansas & Texas:					
920	3,780	3,393	6,323	2,543	3,033
921	3,644	2,628	5,270	1,626	3,170
ouri Pacific:					
920	13,664	12,818	18,241	4,577	6,092
921	13,289	10,786	18,811	5,522	7,801
Total:					
1920	82,382	59,662	110,656	28,274	50,229
1921	71,174	51,480	99,156	27,982	50,121
ware, Lackawanna & Western:					
920	10,860	5,747	12,529	1,669	6,684
921	9,635	5,587	11,317	1,682	6,135
:					
920	23,030	11,293	24,426	1,396	18,562
921	21,639	9,408	25,576	3,937	17,107
York Central:					
920	47,047	23,489	54,504	7,457	34,852
921	39,816	29,700	47,728	7,912	28,412
imore & Ohio:					
920	31,152	18,533	38,452	7,300	23,459
921	25,961	15,379	33,675	7,714	20,237
eland, Cincannati, Chicago & St. Louis:					
920	12,180	7,530	15,512	3,332	9,009
921	11,045	6,186	14,809	3,674	8,862
sylvania:					
920	80,260	43,983	95,443	15,183	54,172
921	71,111	36,797	87,354	16,243	55,961
Total:					
920	204,529	110,575	240,866	36,337	146,738
921	179,207	103,057	220,459	41,162	136,714
apeake & Ohio:					
920	11,847	11,568	18,913	7,066	9,086
921	8,600	10,684	18,908	10,308	6,152
olk & Western:					
920	13,217	9,339	18,339	5,122	10,058
921	9,621	9,738	18,591	8,970	6,619
sville & Nashville:					
920	13,843	11,419	20,476	6,633	9,305
921	14,801	10,244	21,408	6,607	10,994
hern:					
920	17,196	10,056	20,313	3,117	13,315
921	17,389	9,996	20,591	3,202	10,845
Total:					
1920	56,103	42,382	78,041	21,938	41,764
1921	50,411	40,662	79,498	29,087	34,610

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

Roads.	December.				
	Eastbound loaded.	Westbound loaded.	Total eastbound.	Eastbound empty.	Westbound empty.
Chicago & North Western:					
1920	18,108	11,627	26,689	8,581	12,[illegible]
1921	16,706	9,562	21,279	4,573	11,[illegible]
Great Northern:					
1920	12,827	7,247	15,516	2,689	[illegible]
1921	11,692	5,328	13,191	1,498	6,[illegible]
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	5,763	4,243	8,455	2,692	3,[illegible]
1921	4,790	3,357	6,059	1,269	2,[illegible]
Southern Pacific:					
1920	13,620	14,521	24,436	10,416	[illegible]
1921	13,310	12,943	21,066	7,756	7,[illegible]
Missouri, Kansas & Texas:					
1920	3,370	2,895	6,325	2,955	3,[illegible]
1921	3,130	2,318	4,544	1,414	2,[illegible]
Missouri Pacific:					
1920	11,933	11,791	19,461	7,528	[illegible]
1921	11,807	10,682	17,763	5,956	5,[illegible]
Total:					
1920	65,621	52,324	100,882	34,861	[illegible]
1921	61,435	44,190	83,902	22,466	[illegible]
Delaware, Lackawanna & Western:					
1920	10,598	5,057	12,343	1,745	[illegible]
1921	9,688	4,969	11,349	1,661	5,[illegible]
Erie:					
1920	20,191	11,260	23,232	3,041	[illegible]
1921	18,623	7,423	22,184	3,561	[illegible]
New York Central:					
1920	45,425	20,600	55,126	9,701	[illegible]
1921	38,047	17,987	45,957	7,910	[illegible]
Baltimore & Ohio:					
1920	30,061	16,618	39,476	9,415	[illegible]
1921	23,785	13,148	30,697	6,912	[illegible]
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	11,439	6,351	15,612	4,173	[illegible]
1921	10,329	5,392	13,717	3,388	[illegible]
Pennsylvania:					
1920	76,411	39,716	96,165	19,757	[illegible]
1921	63,304	32,466	78,872	15,568	[illegible]
Total:					
1920	194,125	99,602	241,954	47,832	[illegible]
1921	163,776	81,385	202,776	39,000	[illegible]
Chesapeake & Ohio:					
1920	12,178	10,542	21,613	9,435	[illegible]
1921	7,551	8,584	15,074	7,523	[illegible]
Norfolk & Western:					
1920	11,863	8,520	18,548	6,685	[illegible]
1921	9,213	6,837	15,083	5,870	[illegible]
Louisville & Nashville:					
1920	13,951	11,507	21,141	7,190	[illegible]
1921	11,837	9,076	17,298	5,461	[illegible]
Southern:					
1920	16,477	9,268	19,850	3,373	[illegible]
1921	15,493	9,099	18,761	3,268	[illegible]
Total:					
1920	54,469	39,837	81,152	26,683	[illegible]
1921	44,094	33,563	66,216	22,122	[illegible]

Digitized by Google

TABLE B37.—*Statement showing the loaded and empty car-miles by direction produced by typical railroads, 1920–21*—Continued.

FOR YEAR.

Roads.	Eastbound, loaded.	Westbound, loaded.	Total eastbound.	Eastbound, empty.	Westbound, empty.
Chicago & North Western:					
1920	253,407	189,416	336,157	82,750	139,111
1921	213,560	136,849	284,662	71,102	149,206
Great Northern:					
1920	218,785	117,548	250,320	31,535	127,663
1921	163,607	82,879	190,126	26,519	104,855
Minneapolis, St. Paul & Sault Ste. Marie:					
1920	84,672	69,541	107,810	23,138	33,526
1921	62,874	52,626	84,635	21,795	29,242
Southern & Pacific:					
1920	216,585	187,604	291,049	74,464	99,962
1921	185,824	163,209	269,212	83,388	112,779
Missouri, Kansas & Texas:					
1920	49,778	41,650	77,085	29,370	30,961
1921	42,605	29,958	59,922	17,317	32,561
Missouri Pacific:					
1920	174,682	159,120	227,271	52,599	68,920
1921	154,298	140,459	220,923	66,625	83,977
Total:					
1920	997,909	764,879	1,289,692	293,856	500,143
1921	822,768	605,980	1,109,480	286,746	512,620
Delaware, Lackawanna & Western:					
1920	115,254	70,890	133,138	17,884	63,301
1921	107,485	70,906	134,930	27,445	60,003
Erie:					
1920	256,698	147,817	279,387	27,351	154,074
1921	228,630	118,878	274,984	46,354	148,628
New York Central:					
1920	553,690	309,275	646,678	92,988	352,069
1921	444,923	238,997	543,811	98,888	320,264
Baltimore & Ohio:					
1920	384,560	238,584	471,310	86,750	231,653
1921	300,367	172,785	389,349	87,882	240,517
Cleveland, Cincinnati, Chicago & St. Louis:					
1920	149,663	89,372	181,826	32,163	92,404
1921	125,463	71,168	167,163	40,900	102,428
Pennsylvania:					
1920	934,420	556,598	1,102,506	167,086	589,532
1921	765,265	427,589	956,186	190,921	552,417
Total:					
1920	2,394,285	1,412,536	2,814,845	424,222	1,483,033
1921	1,972,133	1,100,323	2,466,423	492,390	1,424,257
Chesapeake & Ohio:					
1920	167,220	132,754	252,514	85,294	111,217
1921	116,009	116,430	211,249	96,240	88,077
Norfolk & Western:					
1920	162,602	114,667	220,939	58,338	105,610
1921	121,344	99,842	194,492	73,148	85,529
Louisville & Nashville:					
1920	179,228	150,573	253,946	74,718	98,659
1921	170,424	125,923	247,029	77,145	120,653
Southern:					
1920	235,619	155,507	270,514	34,886	119,830
1921	192,888	109,796	230,988	38,100	115,865
Total:					
1920	744,669	553,501	997,913	253,236	435,316
1921	600,665	451,991	883,758	283,633	410,124
Grand total:					
1920	4,136,963	2,730,916	5,102,450	971,314	2,418,492
1921	3,395,566	2,158,294	4,459,661	1,062,769	2,347,001

Digitized by Google

TABLE B38.—*Statement showing a comparison of the classes of loading by commodities throughout the United States on steam lines—Showing the total cars loaded, total tonnage, and net tons per car.*

[Data compiled by American Railway Association, Car Service Division.]

	Revenue freight originating.											
	First quarter.						Second quarter.					
	Cars.		Tons.		Tons per car.		Cars.		Tons.		Tons per car.	
	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920
Products of agriculture:												
Wheat	125,070	111,971	4,968,196	4,459,922	39.7	39.8	136,504	93,522	5,388,808	3,684,894	39.5	39.4
Corn	146,125	118,954	5,544,760	4,325,425	37.9	36.4	92,099	80,762	3,435,233	2,921,437	37.3	36.2
Oats	56,720	75,040	1,808,182	2,267,698	31.9	30.2	55,295	58,853	1,730,245	1,767,830	31.3	30.0
Other grain	33,860	44,273	1,095,344	1,507,345	32.5	34.0	30,293	34,935	968,114	1,216,324	32.0	34.8
Flour and meal	90,153	109,670	2,424,374	3,278,997	26.9	29.9	90,143	80,280	2,304,602	2,483,354	25.6	30.9
Other mill products	80,784	101,614	1,866,349	2,585,824	23.1	25.4	84,015	90,001	1,804,363	2,210,212	21.5	24.6
Hay, straw, and alfalfa	133,664	226,426	1,687,709	2,811,295	12.6	12.4	88,285	148,105	1,090,820	1,810,338	12.4	12.2
Tobacco	30,256	27,306	323,272	324,520	10.7	11.9	15,889	18,928	184,833	263,200	11.6	13.9
Cotton	59,969	78,322	753,381	1,036,398	12.6	13.2	51,892	45,466	616,535	563,564	11.9	12.4
Cotton seed and products (exclusive of oil)	67,270	71,192	1,480,745	1,582,141	22.0	22.2	23,932	23,527	513,205	510,746	21.4	21.7
Citrus fruits	30,937	28,272	474,947	451,790	15.4	16.0	27,378	24,332	456,401	425,580	16.7	17.5
Other fresh fruits	41,097	31,602	606,453	467,580	14.8	14.8	56,198	44,104	709,618	603,928	12.6	13.7
Potatoes	52,220	47,185	1,001,832	923,020	19.2	19.6	47,465	37,622	845,819	701,702	17.8	18.7
Other fresh vegetables	37,085	33,966	466,690	459,261	12.6	13.5	40,951	37,760	505,424	517,337	12.3	13.7
Dried fruit and vegetables	9,833	11,273	226,571	284,690	23.0	25.3	7,212	8,270	160,450	198,114	22.2	24.0
Other products of agriculture	50,965	55,276	1,292,272	1,343,941	25.4	24.3	30,646	33,872	670,797	754,582	21.9	22.3
Total	1,045,798	1,172,342	26,023,087	28,109,847	24.9	24.0	878,197	860,339	21,385,267	20,633,142	24.4	24.0
Animals and products:												
Horses and mules	13,219	36,490	149,971	419,441	11.3	11.5	7,321	16,503	82,699	188,291	11.3	11.4
Cattle and calves	163,354	196,537	1,891,368	2,251,621	11.6	11.5	165,081	187,498	1,901,281	2,192,325	11.5	11.7
Sheep and goats	23,967	26,272	236,396	265,802	9.9	10.1	27,181	29,884	269,428	308,950	9.9	10.3
Hogs	169,088	174,513	1,613,920	1,672,230	9.5	9.6	142,408	140,457	1,352,414	1,357,826	9.5	9.7
Fresh meat	50,960	53,770	664,218	755,675	13.0	14.1	49,534	49,280	622,392	651,458	12.6	13.2
Other packing-house products	31,455	35,154	521,380	617,665	16.6	17.6	29,924	28,678	478,151	501,356	16.0	17.5
Poultry	4,961	5,320	54,581	63,148	11.0	11.9	4,257	3,827	45,145	44,042	10.6	11.5
Eggs	10,950	6,434	120,655	74,413	11.0	11.6	21,477	22,166	239,979	257,133	11.2	11.6
Butter and cheese	5,437	5,292	67,511	68,327	12.4	12.9	10,317	8,613	125,081	113,677	12.1	13.2
Wool	5,534	5,795	66,736	66,280	12.1	11.4	8,899	7,118	113,339	89,510	12.7	12.6
Hides and leather	9,643	16,435	193,948	318,444	20.1	19.4	11,370	13,898	240,043	279,421	21.1	20.1
Other animals and products	17,926	21,526	320,000	387,921	17.9	18.0	16,875	20,578	305,501	388,404	18.1	18.9
Total	506,494	583,538	5,900,684	6,960,967	11.7	11.9	494,644	528,500	5,775,453	6,372,393	11.7	12.1
Products of mines:												
Anthracite coal	406,512	365,043	19,337,873	17,304,993	47.6	47.4	435,046	402,097	21,254,080	19,300,597	48.7	48.0
Bituminous coal	1,456,774	1,866,632	73,023,364	90,622,867	50.1	48.5	1,284,931	1,661,186	65,908,865	83,152,797	51.3	50.1
Coke	107,857	198,814	3,984,745	7,075,275	36.5	35.6	45,776	168,739	1,563,567	6,032,255	34.2	35.7

Digitized by Google

Iron ore	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Other ores	37,727	94,321	1,966,614	5,219,500	52.1	55.3	18,886	105,074	887,343	6,355,047	47.0	60.5
Base bullion and matte	2,198	4,753	92,397	195,321	42.0	41.1	2,077	3,364	93,416	144,060	45.0	42.8
Clay, gravel, sand, and stone	287,075	336,571	13,293,703	15,766,002	46.3	46.8	486,819	546,605	22,843,027	25,967,455	46.9	47.5
Crude petroleum	32,749	44,784	1,151,843	1,529,749	35.2	34.2	34,226	46,204	1,159,380	1,600,870	33.9	34.6
Asphaltum	4,376	7,707	145,790	251,057	33.3	32.6	9,941	10,235	328,825	335,672	33.1	32.8
Salt	17,890	24,247	474,012	725,795	26.5	29.9	24,201	27,179	627,908	832,403	25.9	30.6
Other products of mines	19,761	35,795	762,385	1,418,286	38.6	39.6	17,623	42,853	711,901	1,722,822	40.4	40.2
Total	2,404,370	3,042,128	115,836,502	143,323,954	48.2	47.1	2,525,313	3,483,748	124,145,374	169,627,265	49.2	48.7
Products of forests:												
Logs, posts, poles, and cordwood	262,724	341,687	7,605,404	10,111,256	28.9	29.6	254,063	356,860	7,476,802	10,152,884	29.4	28.5
Ties	63,967	30,446	1,950,149	894,290	30.5	29.4	40,873	36,717	1,201,598	1,043,216	29.4	28.4
Pulp wood	102,041	43,190	3,182,513	1,345,813	31.2	31.2	39,584	47,103	1,196,094	1,396,486	30.2	29.6
Lumber, timber, box shooks, etc	269,343	452,559	7,304,250	12,429,828	27.1	27.5	362,387	487,586	9,443,307	13,060,724	26.1	26.8
Other products of forests	23,771	33,440	592,248	794,177	24.9	23.7	20,069	35,849	428,512	795,317	21.4	22.2
Total	721,846	901,322	20,634,564	25,575,364	28.6	28.4	716,976	964,115	19,746,413	26,448,627	27.5	27.4
Manufacture and miscellaneous:												
Refined petroleum and its products	216,273	231,859	6,014,845	6,412,929	27.8	27.7	243,888	262,744	6,762,650	7,184,453	27.7	27.3
Vegetable oils	11,007	10,027	312,359	279,939	28.4	27.9	9,655	8,068	262,808	212,121	27.2	26.3
Sugar, sirup, glucose, and molasses	39,654	47,698	1,080,908	1,422,487	27.3	29.8	39,100	52,976	1,061,212	1,485,118	27.1	28.0
Boat and vessel supplies	996	1,802	16,472	33,530	16.5	18.6	1,520	2,305	20,998	42,353	13.8	18.4
Iron, pig and bloom	35,429	98,546	1,702,968	4,444,482	48.1	45.1	24,614	84,103	1,156,458	3,833,953	47.0	45.6
Rails and fastenings	20,344	17,766	872,539	709,129	42.9	39.9	16,062	17,176	677,702	681,401	42.2	39.7
Bar and sheet iron, structural iron, and pipes	127,217	181,527	4,243,038	6,298,870	33.4	34.7	92,404	182,218	2,906,459	6,437,342	31.5	35.3
Other metals, pig, bar, and sheet	20,725	35,378	760,846	1,273,027	36.7	36.0	14,895	36,494	488,848	1,264,703	32.8	34.7
Castings, machinery, and boilers	57,037	97,155	1,191,921	2,244,621	20.9	23.1	53,353	109,600	1,093,372	2,483,823	20.5	22.7
Cement	49,204	59,869	1,840,623	2,254,589	37.4	37.7	114,962	101,323	4,347,302	3,829,734	37.8	37.8
Brick and artificial stone	57,854	94,610	1,988,854	3,362,258	34.4	35.5	79,514	116,337	2,714,891	4,145,520	34.1	35.6
Lime and plaster	24,697	32,170	650,213	900,972	26.3	28.0	38,459	40,920	954,110	1,144,336	24.8	28.0
Sewer pipe and drain tile	17,099	23,523	326,746	481,111	19.1	20.5	26,688	27,852	499,099	560,801	18.7	20.1
Agricultural implements and vehicles	36,176	60,096	568,005	879,804	15.7	14.6	32,947	63,810	489,672	917,764	14.9	14.4
Automobiles and automobile trucks	59,096	126,624	471,660	953,552	8.0	7.5	105,807	113,121	853,350	863,482	8.1	7.6
Household goods and second-hand furniture	33,250	70,465	336,320	717,445	10.1	10.2	19,582	40,492	185,713	388,013	9.5	9.6
Furniture (new)	9,710	20,466	93,046	206,473	9.6	10.1	12,746	20,916	117,012	205,063	9.2	9.8
Beverages	7,304	11,462	141,786	223,518	19.4	19.5	13,035	18,842	234,777	356,915	18.0	18.9
Ice	45,791	30,918	1,320,067	854,569	28.8	27.6	58,985	62,612	1,438,038	1,217,816	24.4	23.1
Fertilizers	94,853	148,268	2,142,552	3,652,612	22.6	24.6	84,156	124,489	1,800,407	2,947,492	21.4	23.7
Paper, printed matter, and books	23,768	30,237	559,848	691,146	23.6	22.9	23,371	38,423	532,560	902,878	22.8	23.5
Chemicals and explosives	44,289	63,880	1,337,246	1,960,190	30.2	30.7	42,458	66,242	1,260,098	2,038,223	29.7	30.8
Textiles	10,547	14,311	128,835	195,905	12.2	13.7	14,312	18,338	167,148	234,748	11.7	12.8
Canned goods	19,980	27,027	444,993	637,974	22.3	23.6	23,274	28,445	537,848	706,632	23.1	24.8
Other manufactures and miscellaneous	434,182	772,421	11,179,921	17,308,864	23.1	22.4	497,761	827,823	11,332,161	18,998,889	22.8	23.0
Total	1,546,482	2,308,105	39,726,611	58,399,996	25.7	25.3	1,683,568	2,455,669	41,804,693	63,083,573	24.9	25.7
Grand total carloads	6,224,990	8,007,435	208,121,448	262,370,128	33.4	32.8	6,298,698	8,292,371	212,947,200	286,165,000	33.8	34.5
Merchandise, all less carloads			9,846,171	13,561,475					10,628,424	13,573,968		
Grand total carloads and less carloads			217,967,619	275,931,603					223,575,624	299,738,968		

Digitized by Google

TABLE B38.—*Statement showing a comparison of the classes of loading by commodities throughout the United States on steam lines—Showing the total cars loaded, total tonnage, and net tons per car*—Continued.

	Revenue freight originating.											
	Third quarter.						Fourth quarter.					
	Cars.		Tons.		Tons per car.		Cars.		Tons.		Tons per car.	
	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920
Products of agriculture:												
Wheat	302,610	190,447	12,144,344	7,642,699	40.1	40.1	.....	179,381	.....	7,350,647	.....	41.0
Corn	94,862	74,736	3,623,747	2,754,163	38.2	36.9	.....	73,795	.....	2,706,937	.....	36.7
Oats	81,088	83,066	2,425,420	2,673,915	29.9	32.2	.....	58,917	.....	1,913,205	.....	32.5
Other grain	41,549	37,170	1,456,801	1,318,461	35.1	35.5	.....	46,806	.....	1,628,353	.....	34.8
Flour and meal	121,495	84,203	3,085,660	2,626,437	25.4	31.2	.....	88,414	.....	2,589,807	.....	29.3
Other mill products	96,992	90,069	2,100,925	2,236,138	21.7	24.8	.....	73,559	.....	1,854,811	.....	25.2
Hay, straw, and alfalfa	81,725	127,256	1,005,024	1,584,433	12.3	12.5	.....	140,086	.....	1,746,457	.....	12.5
Tobacco	17,250	20,595	192,350	252,045	11.2	12.2	.....	22,342	.....	243,003	.....	10.9
Cotton	60,164	37,336	664,850	468,703	11.1	12.6	.....	111,368	.....	1,316,500	.....	11.8
Cotton seed and products (exclusive of oil)	25,771	14,348	596,170	334,894	23.1	23.3	.....	88,677	.....	2,144,482	.....	24.2
Citrus fruits	12,272	11,668	211,358	207,523	17.2	17.8	.....	21,149	.....	339,616	.....	16.1
Other fresh fruits	130,283	143,997	1,720,187	2,033,549	13.2	14.1	.....	135,691	.....	2,146,358	.....	15.8
Potatoes	60,056	47,326	990,487	816,687	16.5	17.3	.....	87,080	.....	1,675,173	.....	19.2
Other fresh vegetables	30,072	33,762	386,099	495,774	12.8	14.7	.....	48,871	.....	741,308	.....	15.2
Dried fruit and vegetables	9,692	7,990	249,733	202,743	25.8	25.4	.....	17,448	.....	480,147	.....	27.6
Other products of agriculture	38,773	40,604	1,083,177	1,086,358	27.9	26.7	.....	189,513	.....	6,527,370	.....	34.4
Total	1,204,654	1,044,663	31,936,332	26,734,522	26.5	25.6	.....	1,383,097	.....	35,404,174	.....	25.6
Animals and products:												
Horses and mules	8,101	16,562	92,581	191,522	11.4	11.6	.....	11,375	.....	129,293	.....	11.4
Cattle and calves	183,685	214,661	2,128,824	2,497,183	11.6	11.6	.....	246,972	.....	2,865,942	.....	11.6
Sheep and goats	31,221	36,690	298,700	354,323	9.6	9.7	.....	42,460	.....	414,663	.....	9.8
Hogs	119,432	110,405	1,128,702	1,065,393	9.5	9.6	.....	138,269	.....	1,331,903	.....	9.6
Fresh meat	50,794	49,977	642,462	664,819	12.6	13.3	.....	52,898	.....	692,226	.....	13.1
Other packing-house products	37,413	33,504	599,329	548,609	16.0	16.4	.....	31,054	.....	530,419	.....	17.1
Poultry	5,888	5,562	61,875	61,693	10.5	11.1	.....	8,347	.....	86,332	.....	11.5
Eggs	9,855	10,883	111,491	127,109	11.3	11.7	.....	6,614	.....	76,061	.....	11.5
Butter and cheese	11,649	12,182	142,546	156,168	12.3	12.8	.....	6,844	.....	86,965	.....	12.7
Wool	10,270	6,253	128,994	85,824	12.6	13.7	.....	3,022	.....	38,375	.....	12.7
Hides and leather	12,183	11,556	248,422	238,121	20.4	20.6	.....	9,626	.....	208,362	.....	21.6
Other animals and products	18,947	20,884	334,076	393,522	17.6	18.8	.....	20,132	.....	367,557	.....	18.3
Total	499,438	529,119	5,919,002	6,374,286	11.9	12.0	.....	577,613	.....	6,838,198	.....	11.8
Products of mines:												
Anthracite coal	406,489	398,170	19,133,179	19,146,553	47.1	48.7	.....	437,918	.....	21,234,244	.....	48.5
Bituminous coal	1,472,008	2,057,197	70,765,738	100,660,675	48.5	48.9	.....	2,221,784	.....	110,522,086	.....	49.7

Digitized by Google

Iron ore	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
Other ores	24,384	106,850	1,158,594	6,283,422	47.5	58.8		75,126		3,843,791		51.2
Base bullion and matte	1,446	3,656	64,742	155,732	44.8	42.6		2,701		120,918		44.8
Clay, gravel, sand, and stone	608,478	650,116	29,071,682	30,548,043	47.8	47.0		560,177		26,232,054		46.8
Crude petroleum	34,999	47,097	1,239,919	1,680,215	35.4	35.7		46,047		1,590,738		34.5
Asphaltum	14,462	15,723	478,869	529,656	33.1	33.7		9,490		309,590		32.6
Salt	31,507	32,360	818,455	1,046,101	26.0	32.3		21,594		642,172		29.7
Other products of mines	18,466	45,356	757,158	1,794,370	41.0	39.6		37,970		1,451,284		38.2
Total	2,875,054	4,271,478	139,947,089	206,148,332	48.7	48.3		4,010,562		193,413,417		48.2
Products of forests:												
Logs, posts, poles, and cordwood	219,803	360,563	6,473,729	9,846,647	29.5	27.3		316,299		9,002,866		28.5
Ties	38,305	53,064	1,107,123	1,498,210	28.9	28.2		68,122		2,074,207		30.4
Pulp wood	25,285	42,004	759,731	1,187,544	30.0	28.3		40,431		1,194,296		29.5
Lumber, timber, box shooks, etc	333,524	487,459	8,521,809	13,166,933	25.6	27.0		373,844		10,085,694		27.0
Other products of forests	21,620	41,224	450,263	886,191	20.8	21.5		30,887		646,630		20.9
Total	638,537	984,314	17,312,655	26,585,525	27.1	27.0		829,583		23,003,693		27.7
Manufacture and miscellaneous:												
Refined petroleum and its products	276,464	310,020	7,655,249	8,675,372	27.7	28.0		265,593		7,348,433		27.7
Vegetable oils	7,454	6,366	202,452	165,528	27.2	26.0		9,865		280,270		28.4
Sugar, sirup, glucose, and molasses	45,196	56,103	1,232,532	1,627,109	27.3	29.0		39,205		1,162,731		29.7
Boat and vessel supplies	2,052	3,086	27,913	42,834	13.6	13.9		2,074		28,603		13.8
Iron, pig and bloom	24,014	94,669	1,122,934	4,394,722	46.8	46.4		81,536		3,782,519		46.4
Rails and fastenings	13,040	20,775	552,511	817,859	42.4	39.4		21,186		843,540		39.8
Bar and sheet iron, structural iron, and pipe	88,786	210,031	2,724,792	7,466,939	30.7	35.6		204,923		7,187,170		35.1
Other metals, pig, bar, and sheet	15,879	42,275	525,270	1,513,142	33.1	35.8		33,002		1,160,284		35.2
Castings, machinery, and boilers	47,040	112,000	959,694	2,548,192	20.4	22.8		91,342		2,079,891		22.8
Cement	147,128	137,469	5,579,221	5,124,756	37.9	37.3		105,365		3,924,667		37.2
Brick and artificial stone	92,029	125,238	3,173,752	4,476,351	34.5	35.7		92,722		3,258,698		35.1
Lime and plaster	44,791	43,738	1,103,693	1,242,603	24.6	28.4		36,618		1,059,478		28.9
Sewer pipe and drain tile	29,860	31,761	552,028	640,325	18.5	20.2		25,094		484,640		19.3
Agricultural implements and vehicles	26,129	63,657	377,658	903,050	14.5	14.2		39,322		626,036		15.9
Automobiles and automobile trucks	108,942	115,715	879,771	893,585	8.1	7.7		92,215		703,149		7.6
Household goods and second-hand furniture	17,673	37,859	169,682	380,311	9.6	10.0		36,703		364,821		9.9
Furniture (new)	14,330	19,502	132,668	199,155	9.3	10.2		13,027		132,541		10.2
Beverages	13,025	22,072	234,764	436,999	18.0	19.8		10,603		220,593		20.8
Ice	131,076	116,867	3,248,433	2,862,080	24.8	24.4		30,074		773,969		25.7
Fertilizers	47,356	58,884	1,100,950	1,601,388	23.2	27.2		37,083		981,935		26.5
Paper, printed matter, and books	25,063	36,219	557,432	828,082	22.2	22.9		29,309		719,271		24.5
Chemicals and explosives	44,554	74,690	1,304,209	2,332,277	29.3	31.2		63,909		1,987,141		31.1
Textiles	17,364	16,754	210,221	223,711	12.1	13.4		10,362		139,362		13.4
Canned goods	35,584	35,103	833,660	895,280	23.4	25.5		33,736		840,705		24.9
Other manufactures and miscellaneous	524,085	951,184	11,746,725	21,077,815	22.4	22.2		776,185		18,223,413		23.5
Total	1,838,914	2,742,037	46,208,214	71,369,465	25.1	26.0		2,181,053		58,313,960		26.7
Grand total carloads	7,056,597	9,571,611	241,323,292	337,212,130	34.2	35.2		8,981,908		316,973,442		35.3
Merchandise, all less carloads			11,133,525	13,910,125						11,938,705		
Grand total carloads and less carloads			252,456,817	351,122,255						328,912,147		

Digitized by Google

Year.	Total passenger service train revenue.	Passenger.	Excess baggage.	Sleeping car.	Parlor and chair car.	Mail.	Express.	Milk.	Other passenger train.
All roads:									
June 30, 1911	$799,771,186	$657,638,291	$7,490,410	.....	$624,497	$50,702,625	$70,725,137	$7,940,273	$4,649,953
Class I roads:									
June 30, 1911	775,193,210	636,341,495	7,309,984	.....	613,130	49,325,286	69,331,172	7,669,233	4,602,910
1912	782,320,367	639,818,627	7,318,471	.....	644,780	49,529,279	71,773,138	8,096,249	5,139,823
1913	830,255,068	678,966,749	7,465,360	.....	701,064	49,711,893	78,544,017	8,737,164	6,078,821
1914	835,708,636	683,748,602	7,340,859	.....	663,204	53,965,955	74,416,658	9,371,952	6,201,406
1915	783,508,649	629,237,464	6,318,366	2,549,439	1,285,981	56,959,261	68,949,850	14,002,237	4,201,051
1916	846,538,795	673,806,175	6,267,466	2,918,941	1,328,166	60,126,464	80,871,864	15,465,779	5,753,940
Dec. 31, 1916	890,314,574	706,608,630	6,064,359	2,895,797	1,365,037	61,195,800	90,155,445	16,115,884	5,913,622
1917	1,025,373,353	825,211,593	6,234,382	2,845,710	1,508,627	58,775,765	106,914,603	16,759,174	7,120,499
1918	1,247,637,547	1,031,563,016	5,931,779	2,339,144	950,169	53,520,982	126,303,171	19,169,747	7,859,539
1919	1,400,613,589	1,178,453,860	7,440,315	3,207,427	1,369,991	57,497,620	127,595,498	22,929,907	2,118,977
1920	1,635,672,177	1,286,704,660	8,678,685	3,792,042	1,755,485	151,521,728	143,686,718	26,405,633	13,127,226

TABLE B43.—*Income account Pullman Co., years 1910 to 1921.*

Year.	Sleeping car operations.			Auxiliary operations.			Taxes accrued.	Operating income.	Total other income.	Gross corporate income.	Total deductions from gross corporate income.	Net corporate income.
	Revenues.	Expenses.	Net revenue.	Revenues.	Expenses.	Net revenue.						
July 31, 1910	$35,334,074	$23,961,524	$11,372,550	$3,712,222	$1,232,117	$2,480,105	$702,129	$13,150,526	$1,160,792	$14,311,317	$377,820	$13,933,498
June 30, 1911	35,697,582	25,916,476	9,781,106	2,663,180	1,142,968	1,520,212	830,172	10,471,146	1,055,687	11,526,833	110,156	11,416,677
1912	37,090,413	26,258,695	10,831,718	3,053,031	1,165,197	1,887,834	931,134	11,788,418	636,106	12,424,524	127,525	12,296,998
1913	40,103,216	23,712,979	13,390,237	1,091,875	1,102,684	[1] 10,809	962,371	12,417,056	66,030	13,083,086	249,196	12,833,890
1914	41,499,396	28,115,722	13,383,674	881,235	881,775	[1] 540	1,112,759	12,270,376	440,839	12,711,215	47,859	12,663,356
1915	38,722,660	26,632,739	12,089,921	649,532	651,860	[1] 2,328	1,271,320	10,816,274	538,678	11,354,952	110,993	11,243,958
1916	43,347,342	28,836,092	14,511,250	736,609	710,840	25,769	1,519,809	13,017,211	608,295	13,625,505	69,414	13,556,092
Dec. 31, 1916	44,202,620	30,878,525	13,324,095	755,337	725,364	29,973	1,608,898	11,745,169	584,289	12,329,458	26,879	12,302,579
1917	51,776,681	35,448,873	16,327,808	762,382	746,294	16,088	3,874,774	12,469,123	942,320	13,411,442	5,573	13,405,869
1918	49,967,147	40,593,070	9,374,077	555,087	567,761	[1] 12,674	1,598,547	7,762,856	2,340,179	10,103,035	.....	10,103,035
1919	69,071,548	48,618,253	20,453,295	786,989	752,960	34,029	1,293,511	19,193,813	355,028	19,548,841	.....	19,548,841
1920	72,123,672	61,030,756	11,092,916	1,007,566	995,551	12,015	1,800,920	9,304,012	331,732	9,635,743	.....	9,635,743
1921	64,443,621	61,913,561	2,530,060	1,144,958	1,067,230	77,728	3,084,215	[1] 456,426	1,815,359	1,358,932	.....	1,358,932

[1] Deficit.

Digitized by Google

ABLE B44.—*Employees, hours or days worked, and compensation, Class I roads, calendar years.*

NUMBER OF EMPLOYEES.

Class of employees.	1916	1917	1918	1919	1920
neral officers	7,354	7,716	8,254	8,405	8,659
vision officers	10,070	10,730	11,680	12,545	13,663
rks, messengers, and attendants	174,804	192,569	215,338	231,347	249,894
sistant engineers and draftsmen	10,432	11,989	10,776	10,758	10,521
W. and S. foremen	7,549	8,038	8,417	8,242	8,380
tion foremen	49,242	40,368	41,018	40,994	41,933
neral foremen, M. E. department	1,476	1,549	1,556	1,736	1,856
ng and other foremen, M. E. department	16,651	18,043	19,347	23,418	25,542
chinists	37,947	41,112	46,365	58,627	64,554
iler makers	12,201	12,931	14,302	18,331	20,470
acksmiths	7,833	8,115	8,891	10,038	10,910
sons and bricklayers	1,261	1,361	1,541	1,193	1,156
ructural ironworkers	759	885	797	630	677
rpenters	50,670	53,084	54,725	53,690	52,566
nters and upholsterers	10,946	11,087	11,166	12,264	13,564
ectricians	8,677	9,564	10,980	13,168	14,797
r-brake men	5,699	5,904	6,385	7,622	8,011
r inspectors	18,298	19,661	21,735	24,718	26,425
r repairers	65,624	66,531	72,777	81,882	89,167
her skilled laborers	48,504	52,989	56,860	57,489	60,116
chanics' helpers and apprentices	79,948	86,021	98,132	111,092	133,142
ction men	253,577	241,435	261,701	279,885	289,841
her unskilled laborers	102,636	107,564	116,887	122,551	120,898
remen of construction gangs and work trains	2,501	2,567	2,521	1,964	1,697
her men in construction gangs and work trains	37,604	36,759	33,264	30,033	25,153
aveling agents and solicitors	5,914	5,979	3,053	1,330	3,383
mployees in outside agencies	1,846	1,741	1,293	955	1,204
her traffic employees	628	613	667	401	411
rain dispatchers and directors	4,807	5,101	5,406	5,519	6,050
legraphers, telephoners, and block operators	19,499	20,526	21,896	21,308	22,032
legraphers and telephoners operating interlockers	7,742	7,694	7,607	7,980	8,199
evermen (nontelegraphers)	3,367	3,463	3,542	3,926	3,837
legrapher-clerks	10,712	11,250	11,411	11,635	12,444
gent-telegraphers	19,493	19,421	19,512	19,333	19,702
ation agents (nontelegraphers)	14,367	14,476	14,722	14,059	13,811
ation masters and assistants	577	592	645	959	619
ation service employees	106,851	117,494	113,549	115,149	120,740
ardmasters	3,502	3,719	4,036	3,931	4,181
ardmaster's assistants	2,164	2,507	3,217	3,274	3,605
ard engineers and motormen	15,878	18,933	21,310	19,625	21,793
ard firemen and helpers	16,190	19,516	21,979	20,031	22,040
ard conductors (or foremen)	15,362	18,703	20,823	19,326	20,924
ard brakemen (switchmen or helpers)	40,175	48,451	53,790	49,303	52,425
ard switch tenders	4,872	4,848	5,119	5,985	6,067
ther yard employees	4,060	3,984	4,277	4,750	4,947
ostlers	7,213	8,083	9,229	10,846	12,098
ngine-house men	50,313	55,133	63,652	70,850	74,751
oad freight engineers and motormen	31,675	34,155	34,990	30,907	33,801
oad freight firemen and helpers	33,637	36,328	38,102	32,938	36,165
oad freight conductors	25,430	27,152	27,679	25,181	27,588
oad freight brakemen and flagmen	63,285	67,818	69,048	61,989	68,135
oad passenger engineers and motormen	13,429	13,297	12,750	12,477	13,096
oad passenger firemen and helpers	13,131	13,105	12,419	12,112	12,687
oad passenger conductors	10,633	10,655	10,484	10,419	10,908
oad passenger baggagemen	5,618	5,524	5,371	5,442	5,741
oad passenger brakemen and flagmen	14,800	14,854	14,423	14,904	15,973
ther road train employees	3,329	3,548	3,512	3,553	3,653
rossing flagmen and gatemen	15,956	15,976	16,936	22,416	23,026
rawbridge operators	1,313	1,329	1,424	1,613	1,652
loating equipment employees	10,318	11,110	10,385	10,455	10,953
xpress service employees	1	4	12		
olicemen and watchmen	8,372	11,310	13,506	11,341	12,598
ther transportation employees	6,243	5,780	6,057	5,333	5,417
ll other employees	19,131	19,632	18,297	19,246	21,570
Total	1,647,097	1,732,876	1,841,575	1,913,423	2,031,927

Digitized by Google

TABLE B44.—*Employees, hours or days worked, and compensation, Class I roads, calendar years*—Continued.

HOURS OR DAYS WORKED.

Class of employees.	1916	1917	1918	1919	1920
General officers	[1] 2,376,722	[1] 2,511,877	[1] 2,586,526	[1] 2,724,623	[1] 2,897,044
Division officers	[1] 3,533,172	[1] 4,761,167	[1] 4,130,114	[1] 4,385,902	[1] 4,746,732
Clerks, messengers, and attendants	504,132,486	552,227,779	595,166,115	594,365,470	629,418,659
Assistant engineers and draftsmen	33,656,190	37,105,000	34,496,800	26,835,504	26,773,288
M. W. and S. foremen	25,506,300	27,062,550	29,480,950	21,584,640	22,056,592
Section foremen	138,257,400	137,927,480	144,259,190	110,031,496	112,271,624
General foremen, M. E. department	[1] 518,477	[1] 601,989	[1] 565,765	[1] 606,434	[1] 653,463
Gang and other foremen, M. E. department	[1] 5,728,266	[1] 6,661,510	[1] 6,900,289	[1] 7,984,134	[1] 8,716,081
Machinists	111,525,703	123,956,345	150,109,561	147,795,525	168,453,178
Boiler makers	36,639,324	39,857,090	47,284,601	47,552,354	54,516,502
Blacksmiths	21,600,862	22,896,390	26,222,618	23,979,241	27,351,921
Masons and bricklayers	3,723,043	3,885,155	4,123,268	2,705,598	2,811,037
Structural ironworkers	2,395,743	2,515,175	2,219,471	1,501,391	1,641,619
Carpenters	150,081,011	154,837,848	160,517,099	128,686,517	131,854,635
Painters and upholsterers	30,394,601	30,346,934	31,484,440	28,515,194	33,029,766
Electricians	28,833,970	32,061,960	37,166,120	34,060,648	38,192,306
Air-brake men	18,772,477	19,595,281	20,212,613	19,866,840	21,171,844
Car inspectors	72,204,712	77,627,749	83,731,061	69,683,595	75,027,005
Car repairers	190,440,757	195,663,719	225,068,356	204,129,499	226,387,613
Other skilled laborers	148,802,529	163,623,357	175,802,557	145,329,102	157,478,533
Mechanics' helpers and apprentices	233,369,362	256,194,760	304,343,627	280,903,702	345,413,095
Section men	785,472,168	754,597,545	783,684,132	689,309,479	761,965,074
Other unskilled laborers	322,512,963	334,021,132	360,705,047	312,250,017	311,282,925
Foremen of construction gangs and work trains	8,216,222	8,565,508	8,062,783	5,250,269	4,979,476
Other men in construction gangs and work trains	115,527,538	111,631,610	98,363,165	71,929,438	69,760,899
Traveling agents and solicitors	[1] 1,862,576	[1] 1,890,101	[1] 820,538	[1] 417,100	[1] 1,114,385
Employees in outside agencies	[1] 604,617	[1] 531,565	[1] 405,237	[1] 291,255	[1] 373,818
Other traffic employees	[1] 195,387	[1] 185,674	[1] 209,166	[1] 129,339	[1] 129,648
Train dispatchers and directors	14,894,466	15,459,743	16,327,953	15,785,822	16,463,972
Telegraphers, telephoners, and block operators	59,315,751	60,742,374	62,316,297	58,754,179	61,114,689
Telegraphers, and telephoners operating interlockers	22,324,374	22,759,285	22,491,021	22,182,731	23,179,706
Levermen (nontelegraphers)	11,885,890	12,065,762	12,043,077	11,132,833	11,042,883
Telegrapher-clerks	34,979,246	36,419,161	35,503,560	32,556,109	34,944,728
Agent-telegraphers	71,885,927	70,897,124	67,196,501	55,861,997	56,345,346
Station agents (nontelegraphers)	51,597,160	53,751,010	54,094,450	39,017,048	38,023,032
Station masters and assistants	2,013,270	2,194,230	2,252,430	1,740,768	1,760,144
Station service employees	352,182,098	369,008,914	345,036,926	306,887,997	316,398,151
Yardmasters	12,810,370	13,980,420	15,036,090	11,260,952	12,002,408
Yardmaster's assistants	8,057,470	9,571,620	12,218,170	9,085,568	10,255,982
Yard engineers and motormen	58,992,936	63,373,000	65,188,069	56,618,800	64,451,726
Yard firemen and helpers	58,797,125	63,179,431	65,028,755	55,248,050	63,873,479
Yard conductors (or foremen)	56,738,866	62,505,433	63,355,963	53,977,812	61,803,611
Yard brakemen (switchmen or helpers)	136,308,019	148,571,434	154,197,917	130,457,992	148,531,558
Yard switch tenders	18,692,752	18,424,277	18,208,615	17,494,472	17,473,587
Other yard employees	14,495,039	15,129,724	14,715,075	13,676,053	13,955,014
Hostlers	29,328,145	32,323,497	35,025,914	32,014,148	35,772,846
Engine-house men	193,493,907	211,563,292	244,160,505	214,405,749	221,298,968
Road freight engineers and motormen	96,213,951	104,169,517	107,441,754	89,102,332	102,744,781
Road freight firemen and helpers	96,820,558	105,068,407	108,067,523	89,509,172	103,607,038
Road freight conductors	82,309,030	89,309,560	90,474,067	76,370,887	88,159,084
Road freight brakemen and flagmen	198,659,829	213,807,618	214,441,781	183,494,773	212,063,346
Road passenger engineers and motormen	31,718,188	32,495,390	32,549,456	32,150,123	33,508,806
Road passenger firemen and helpers	30,415,324	31,181,456	30,599,012	30,524,061	31,780,051
Road passenger conductors	28,126,893	28,426,148	28,155,136	28,552,794	29,988,094
Road passenger baggagemen	15,356,479	15,764,566	15,420,594	15,230,234	16,068,507
Road passenger brakemen and flagmen	38,020,785	38,591,603	38,671,324	39,740,591	42,521,607
Other road train employees	9,177,584	9,597,683	9,503,140	9,573,598	10,307,770
Crossing flagmen and gatemen	65,020,440	60,092,080	65,795,210	65,283,040	66,213,248
Drawbridge operators	5,336,910	5,818,830	5,673,140	4,704,352	4,829,008
Floating equipment employees	39,892,633	40,896,406	38,091,704	33,671,422	34,749,142
Express service employees	8,428	5,191	15,622	.....	224
Policemen and watchmen	31,555,610	42,645,160	48,539,580	33,121,096	36,454,384
Other transportation employees	20,381,800	18,490,024	16,376,872	14,118,112	14,496,072
All other employees	63,325,944	53,132,640	51,589,632	51,612,120	58,145,520
Total	5,043,198,558	5,257,632,277	5,528,249,409	4,900,183,126	5,316,187,003
	[1] 14,819,217	[1] 17,143,886	[1] 15,617,635	[1] 16,538,787	[1] 18,631,121

[1] Days worked.

Digitized by Google

ABLE B44.—*Employees, hours or days worked, and compensation, Class I roads, calendar years*—Continued.

AGGREGATE COMPENSATION.

Class of employees.	1916	1917	1918	1919	1920
eneral officers	$33,153,179	$34,832,985	$36,124,648	$39,904,177	$47,119,465
ivision officers	20,120,579	22,513,625	29,426,668	37,530,991	45,341,370
erks, messengers, and attendants	150,866,870	175,875,070	260,419,439	311,028,806	403,533,246
ssistant engineers and draftsmen	11,737,506	13,722,480	15,872,541	18,551,721	22,432,366
. W. and S. foremen	8,548,162	9,619,428	14,104,470	15,329,281	19,043,063
ction foremen	32,827,116	35,744,163	51,482,200	54,119,930	73,574,100
eneral foremen, M. E. department	2,322,559	2,572,550	4,037,456	5,235,995	6,214,727
ang and other foremen, M. E. department	20,516,330	24,386,355	44,549,281	56,549,200	70,117,883
achinists	45,726,973	57,321,897	109,350,252	110,092,266	144,482,489
oiler makers	15,001,660	18,423,117	34,250,775	35,745,633	47,424,872
lacksmiths	8,479,978	10,210,190	18,668,199	17,667,086	23,225,748
asons and bricklayers	1,172,317	1,269,437	2,003,686	1,651,460	2,002,507
ructural ironworkers	782,280	897,720	1,135,156	1,083,399	1,333,450
arpenters	43,482,500	49,870,186	81,642,504	79,558,356	96,705,557
ainters and upholsterers	9,384,201	10,537,323	17,567,663	19,020,328	25,560,103
lectricians	8,303,089	9,853,748	18,978,423	25,311,187	32,609,422
ir-brake men	5,367,986	6,412,801	11,731,546	13,876,733	17,342,096
ar inspectors	17,800,725	22,425,120	47,911,611	48,401,413	61,301,157
ar repairers	54,180,395	66,073,861	124,999,486	139,140,375	180,775,317
ther skilled laborers	45,392,740	56,440,502	98,776,654	101,580,072	126,292,145
echanics' helpers and apprentices	55,655,994	70,718,313	137,964,298	137,716,076	206,622,668
ection men	129,033,692	145,164,191	226,023,238	264,082,619	345,511,579
ther unskilled laborers	62,454,886	74,773,897	121,539,357	133,549,382	158,492,791
oremen of construction gangs and work trains	2,327,046	2,648,162	3,636,320	3,023,744	3,603,723
ther men in construction gangs and work trains	20,913,705	22,957,221	30,453,174	29,141,572	34,062,082
raveling agents and solicitors	9,264,425	9,806,571	4,817,046	2,837,502	8,774,866
mployees in outside agencies	1,923,120	1,855,028	1,922,626	1,618,357	2,554,393
ther traffic employees	750,284	815,275	1,037,518	859,421	1,000,459
rain dispatchers and directors	8,275,007	9,184,669	12,915,336	15,147,240	18,410,074
elegraphers, telephoners, and block operators	16,742,699	18,813,933	26,780,321	33,957,268	39,449,222
elegraphers, and telephoners operating interlockers	6,736,371	7,358,023	9,996,454	13,241,302	15,239,075
evermen (non telegraphers)	2,615,450	2,946,378	4,300,608	6,037,552	6,711,616
elegrapher-clerks	8,900,780	10,037,611	14,123,804	18,512,981	22,234,511
gent telegraphers	16,769,598	18,414,893	25,743,693	33,913,571	37,041,544
tation agents (non telegraphers)	13,683,585	15,044,554	19,633,129	24,637,032	27,267,797
tation masters and assistants	683,034	764,833	1,044,311	1,202,070	1,426,204
tation service employees	71,487,808	83,389,097	113,056,341	130,998,766	167,188,492
ardmasters	5,688,195	6,702,730	9,890,700	11,487,462	13,727,363
ardmaster's assistants	3,357,311	4,274,026	7,420,791	8,175,807	10,492,658
ard engineers and motormen	25,605,666	33,907,275	43,675,924	41,378,151	57,003,401
ard firemen and helpers	15,989,492	21,348,404	30,064,804	30,239,033	43,486,226
ard conductors (or foremen)	21,864,338	29,650,752	39,801,584	36,758,113	51,332,739
ard brakemen (switchmen or helpers)	48,118,463	64,282,899	89,986,392	83,127,792	115,700,119
ard switch tenders	3,682,814	4,102,855	5,892,000	8,907,612	10,590,361
ther yard employees	2,275,926	2,655,581	4,214,416	5,320,871	7,178,131
ostlers	7,610,394	10,052,260	16,958,137	18,270,774	24,493,956
ngine-house men	36,331,740	46,024,605	80,051,113	93,125,620	114,440,997
oad freight engineers and motormen	58,656,271	72,013,998	87,256,517	82,152,559	115,985,339
oad freight firemen and helpers	37,868,522	46,949,280	64,247,353	60,616,864	88,239,494
oad freight conductors	41,125,243	50,364,297	62,814,321	58,263,172	82,478,440
oad freight brakemen and flagmen	66,602,840	81,521,397	113,652,142	107,083,780	157,619,813
oad passenger engineers and motormen	28,529,665	29,688,851	32,221,378	37,355,314	43,353,898
oad passenger firemen and helpers	17,034,213	17,745,404	21,575,475	26,088,916	31,404,269
oad passenger conductors	19,956,674	20,947,221	23,828,606	27,540,380	32,383,628
oad passenger baggagemen	6,167,707	6,429,332	8,469,837	10,237,070	12,758,573
oad passenger brakemen and flagmen	15,262,872	16,246,346	21,803,585	26,657,416	33,246,592
ther road train employees	2,626,450	2,899,477	3,801,803	5,106,618	6,506,721
rossing flagmen and gatemen	7,828,636	8,548,073	15,128,882	21,662,777	25,278,568
rawbridge operators	923,670	1,011,674	1,589,233	1,942,261	2,326,994
loating equipment employees	9,207,235	10,314,174	13,166,895	16,799,355	19,870,838
Express service employees	807	753	11,868	.....	151
Policemen and watchmen	6,754,116	10,139,050	15,314,870	16,961,311	21,828,836
Other transportation employees	4,221,329	4,889,081	6,842,662	6,613,766	8,397,168
All other employees	11,901,276	13,015,350	15,912,831	19,400,774	26,048,889
Total	1,468,576,394	1,739,482,142	2,613,813,351	2,843,128,432	3,698,216,351

Digitized by Google

TABLE B45.—*Statement showing what the reduction in compensation for the first six months of 1921 would have been had the wage reduction of July 1, 1921, been in effect during that period.*

Group of employees.	Number.	Hours or days worked.	For the first 6 months of 1921.			Per cent of decrease in compensation effective July 1, 1921.	Returns for first 6 months, 1921, decreased to the extent of wage reduction effective July 1, 1921.		
			Aggregate compensation.	Compensation per unit.	Ratio to 1916 per unit.[1]		Aggregate compensation.	Compensation per unit.	Ratio to 1916 per unit.[1]
General officers	8,820	[2] 1,469,769	$25,989,618.00	$11,608.00	185.02	[3] 10.00	$23,391,000.00	$10,447.00	166.51
Division officers	12,714	[2] 2,194,127	22,548,333.00	10,071.00	264.47	[3] 10.00	20,293,000.00	9,064.00	238.03
Section foremen and section men	235,523	281,006,718	127,848,509.00	731.00	164.27	17.87	113,221,000.00	600.00	134.83
General foremen, gang and other foremen, maintenance of equipment department	23,733	[2] 3,963,832	34,142,209.00	64.85	347.53	7.43	31,607,000.00	60.03	321.70
Clerical forces, including messengers	223,672	271,983,062	187,224,417.00	134,163.00	298.98	8.65	171,028,000.00	122,558.00	273.12
Traffic employees	6,236	[2] 997,919	8,077,861.00	3,608.00	159.72	[3] 10.00	7,270,000.00	3,247.00	143.74
Car inspectors, car repairers, and air brakemen	84,688	103,514,920	86,125,716.00	163.58	258.91	9.61	77,846,000.00	147.86	234.03
Road passenger trainmen	60,807	76,268,174	79,016,895.00	292.00	189.61	6.62	73,786,000.00	273.00	177.27
Road freight trainmen	136,712	173,118,168	157,455,563.00	616.00	193.10	8.80	143,603,000.00	562.00	176.18
All transportation employees except road passenger and freight trainmen	404,654	535,915,258	352,595,328.00	670.00	237.59	12.20	309,566,000.00	588.00	208.51
All employees	1,607,568	2,005,289,427	1,436,229,464.00	641,460.00	230.80	11.09	1,276,975,000.00	570,322.00	205.20

[1] Compensation per units are as follows: General officers, per train-mile per mile of road; division officers, per train-mile per mile of road; section foremen and section men, per mile of track operated; general foremen, gang and other foremen, maintenance of equipment department, per 1,000 train-miles; clerical forces, including messengers, per train-mile per mile of track; traffic employees, per train-mile per mile of road; car inspectors, car repairers, and air-brake men, per 1,000 train-miles; road passenger trainmen, per 1,000 passenger train-miles; road freight trainmen, per 1,000 freight train-miles; all transportation employees except road passenger and freight trainmen, per 1,000 train-miles; all employees per train mile per mile of road.

[3] Estimated.

[2] Days worked.

Digitized by Google

TABLE 113.—*Summary of Federal aid projects completed and payments made.*

[From Bureau of Public Roads, 1921.]

[*Explanation of items.*—Total cost: All charges reported as construction cost. Federal aid: All payments made by the Federal Government. Grading: All charges for clearing, grubbing, excavation, etc. Paving: Cost of pavement in place. Shoulders: Cost of shoulder material where segregated from paving costs. Structures: Bridges, culverts, drain-pipe, guard rail, retaining walls, etc. Engineering: Expense of engineering supervision during construction. Full costs not always reported by State Highway Departments.]

Geographic divisions.	Number of projects and sections.	Total cost.	Federal aid paid.	Miles.	Subdivision of total cost.									
					Grading.	Per cent.	Paving.	Per cent.	Shoulders.	Per cent.	Structures.	Per cent.	Engineering.	Per cent.
Total for all States	1,350	$112,325,302.11	$48,584,230.35	7,480.1	$24,122,204.73	21	$68,208,966.41	61	$889,461.47	1	$15,927,290.10	14	$3,177,379.39	3
Maine	4	620,117.95	306,054.34	28.0	166,842.89	27	363,705.10	59	28,166.18	4	43,637.68	7	17,766.10	3
New Hampshire	96	1,615,772.92	776,002.43	104.5	303,544.64	19	1,014,080.82	62	153.00	0	256,298.64	16	41,695.82	3
Vermont	9	244,443.67	118,669.91	11.0	63,372.10	26	128,470.89	52	3,203.00	1	38,277.95	16	11,119.73	5
Massachusetts	15	1,014,245.83	448,716.11	37.7	156,271.82	15	787,981.84	78	.....	0	50,163.47	5	19,828.70	2
Rhode Island	9	941,698.60	391,680.40	24.0	176,874.72	19	668,703.57	70	.....	0	71,043.00	8	25,077.31	3
Connecticut	1	125,660.79	53,000.00	5.3	10,790.24	9	108,786.04	87	1,630.25	1	4,248.96	3	205.30	0
Total, New England	134	4,561,939.76	2,094,123.19	210.5	877,696.41	19	3,071,728.26	67	33,152.43	1	463,669.76	10	115,692.96	3
New York	4	267,595.68	133,673.37	10.3	44,931.00	17	194,618.48	73	.....	0	13,864.12	5	14,182.08	5
New Jersey	17	2,327,860.22	865,117.31	55.9	256,195.61	11	1,677,696.71	72	117,209.68	5	231,206.95	10	45,551.27	2
Pennsylvania	28	4,167,718.48	1,910,387.00	113.7	737,940.03	18	3,037,926.06	73	10,724.50	0	381,127.89	9	.....	0
Total, Middle Atlantic	49	6,763,174.38	2,909,177.68	179.9	1,039,066.64	15	4,910,241.25	73	127,934.18	2	626,198.96	9	59,733.35	1
Ohio	31	4,186,469.32	1,405,643.35	146.1	309,199.38	7	3,583,195.65	85	30,611.04	1	196,230.25	5	67,233.00	2
Indiana	11	1,729,261.66	839,537.55	43.6	176,339.38	10	1,365,840.41	79	147.36	0	154,176.96	9	32,757.55	2
Illinois	63	7,904,700.02	3,935,707.25	252.5	958,177.02	12	6,117,312.59	77	193,259.71	3	635,870.01	8	80.69	0
Michigan	25	1,948,737.60	899,825.52	111.0	347,077.03	18	1,415,622.64	73	155.95	0	184,463.26	9	1,418.72	0
Wisconsin	85	3,700,129.09	1,243,139.10	306.7	891,856.35	24	2,342,554.39	63	3,521.22	1	413,056.25	11	49,140.88	1
Total, East North Central	215	19,469,297.69	8,323,853.27	859.9	2,682,649.16	14	14,824,525.68	76	227,695.28	1	1,583,796.73	8	150,630.84	1

Digitized by Google

TABLE H5.—*Summary of Federal-aid projects completed and payment made*—Continued.

Geographic divisions.	Number of projects and sections.	Total cost.	Federal aid paid.	Miles.	Subdivision of total cost.									
					Grading.	Per cent.	Paving.	Per cent.	Shoulders.	Per cent.	Structures.	Per cent.	Engineering.	Per cent.
Minnesota	73	7,552,239.13	2,906,506.78	879.5	2,340,567.49	31	4,249,958.26	56	11,907.70	0	804,599.99	11	145,205.69	2
Iowa	17	3,698,704.48	1,266,548.91	195.0	677,593.99	19	2,865,183.88	77	.....	0	104,688.52	3	51,238.09	1
Missouri	14	867,484.06	357,276.79	78.5	116,731.75	13	609,005.28	71	5,958.20	1	99,176.12	11	36,612.71	4
North Dakota	11	342,572.40	158,725.68	138.6	192,322.11	56	21,095.88	6	.....	0	110,213.50	32	18,940.91	6
South Dakota	3	254,576.72	122,813.20	22.5	36,508.04	14	143,427.37	56	.....	0	67,827.27	27	6,814.04	3
Nebraska	10	539,428.44	194,435.81	52.3	150,094.54	28	336,876.42	62	.....	0	35,109.18	7	17,348.30	3
Kansas	17	2,013,097.01	660,897.06	55.5	288,150.01	14	1,518,787.74	76	2,630.70	0	160,293.10	8	43,235.46	2
Total, West North Central.	145	15,268,102.24	5,667,204.23	1,421.9	3,801,967.93	25	9,744,334.83	64	20,496.60	0	1,381,907.68	9	319,395.20	2
Delaware	6	1,615,761.46	393,654.83	28.1	305,823.92	19	1,177,823.01	73	.....	0	113,414.53	7	18,700.00	1
Maryland	48	3,361,059.76	1,643,868.55	128.8	462,652.93	14	2,465,783.51	73	242,704.37	7	146,697.85	5	43,221.10	1
Virginia	27	1,235,053.90	604,166.41	100.3	344,381.90	28	723,295.51	58	.....	0	132,982.27	11	34,394.22	3
West Virginia	18	610,782.71	281,101.72	31.5	99,014.65	16	463,560.42	76	2,062.00	0	41,301.76	7	4,843.88	1
North Carolina	42	2,954,675.61	1,285,578.54	238.2	680,949.66	23	1,777,718.97	60	5,303.88	0	386,892.55	13	103,810.55	4
South Carolina	43	2,421,835.86	1,135,761.47	247.3	747,880.13	31	1,077,824.63	45	10,678.25	0	494,109.45	20	91,391.40	4
Georgia	97	8,386,469.12	3,753,169.36	447.3	1,296,139.27	15	3,497,992.83	42	31,388.86	0	3,270,796.69	39	290,151.47	4
Florida	1	33,951.88	16,938.10	10.4	11,217.18	33	14,889.92	44	.....	0	6,375.12	19	1,469.66	4
Total, South Atlantic	282	20,619,638.30	9,114,268.98	1,231.9	3,948,069.64	19	11,198,888.80	54	292,137.36	2	4,592,570.22	22	587,982.28	3
Kentucky	8	798,522.26	367,631.28	32.1	132,948.05	17	514,692.39	64	395.15	0	129,830.69	16	20,655.97	3
Tennessee	1	37,349.89	18,674.94	0.0	.....	0	.....	0	.....	0	35,529.64	95	1,820.25	5
Alabama	47	2,859,245.30	1,342,151.90	288.5	764,367.57	27	1,326,173.31	46	.....	0	626,866.09	22	141,838.33	5
Mississippi	24	1,313,824.21	629,767.79	165.9	376,093.49	29	682,838.18	52	.....	0	207,963.27	16	46,929.27	3
Total, East South Central.	80	5,008,941.66	2,358,225.91	486.5	1,273,409.11	26	2,523,703.88	50	395.15	0	1,000,189.69	20	211,243.82	4
Arkansas	34	4,169,887.97	1,291,357.10	359.7	98,149.18	2	3,823,420.86	92	1,105.56	0	120,227.12	3	126,985.25	3
Louisiana	18	1,198,009.29	513,939.71	130.6	153,470.64	13	803,391.25	69	73,825.03	5	126,084.91	10	41,237.46	3
Oklahoma	14	1,264,093.55	619,719.39	48.1	139,718.12	11	653,600.36	52	3,453.89	0	415,345.87	33	51,975.31	4
Texas	76	6,219,069.10	2,605,551.67	691.9	1,038,436.08	17	3,477,791.00	56	24,119.13	0	1,518,741.47	24	159,981.42	3
Total, West South Central.	142	12,851,059.91	5,030,567.87	1,250.3	1,429,774.02	11	8,758,203.47	68	102,503.61	1	2,180,399.37	17	380,179.44	3

Digitized by Google

Idaho	23	3,448,448.01	1,594,986.66	216.1	1,733,232.24	50	1,029,852.75	30	27,535.04	1	278,555.38	14	176,820.30	3
Wyoming	43	2,295,347.16	1,067,122.09	296.0	716,066.19	31	757,852.43	33	293.15	0	604,381.77	30	126,753.62	6
Colorado	49	2,570,273.58	1,218,636.76	179.7	646,499.01	25	1,396,553.75	54	34,075.61	1	329,027.87	13	164,117.34	7
New Mexico	12	1,174,951.17	585,650.90	114.8	242,471.34	21	677,875.48	58	.....	0	204,117.17	17	50,487.18	4
Arizona	21	2,172,569.39	1,045,405.88	88.3	407,025.51	19	1,082,002.32	50	.....	0	604,398.02	28	79,143.54	3
Utah	2	34,700.60	16,330.84	0.4	1,501.25	4	13,666.24	40	.....	0	18,160.29	52	1,372.82	4
Nevada	10	873,621.53	385,663.67	63.5	325,441.48	37	342,064.33	40	138.90	0	142,046.58	16	63,930.24	7
Total, Mountain	194	14,601,912.71	6,893,642.89	1,157.2	4,872,657.14	33	6,019,535.61	41	62,346.30	1	2,878,510.63	20	768,863.03	5
Washington	65	6,854,895.52	3,260,003.64	311.2	2,016,302.11	30	3,845,201.28	56	118.85	0	718,159.15	10	275,114.13	4
Oregon	28	4,213,454.95	1,960,346.72	269.2	1,493,864.54	35	2,177,414.58	52	22,601.85	1	307,279.20	7	212,294.78	5
California	16	2,112,884.99	972,725.97	121.6	686,758.03	32	1,135,188.77	54	79.86	0	194,608.77	9	96,249.56	5
Total, Pacific	109	13,181,235.46	6,193,076.33	702.0	4,196,924.68	32	7,157,804.63	54	22,800.56	0	1,220,047.12	9	583,658.47	5

Digitized by Google

TABLE H7.—*Summary of salient features of State laws regulating motor-vehicle common carriers.*

[Submitted by National Automobile Chamber of Commerce.]

State.	Law in effect.	State agency exercising control.	Application of control.	Prerequisites of operation.	General powers of State agency, etc.	Special or extra State taxes.
Alabama	1919	State tax commission.	Passenger transportation only; within, out, from, and into municipalities.	Filing of written statement showing terminal points of routes to be covered; obtaining of special license.		In lieu of regular registration fees, the following: Seating capacity, 5 passengers or less, $37.50; seating capacity, over 5 passengers, less than 10, $60; seating capacity, over 10 passengers, $90.
Arizona	1919	Corporation commission.	Passenger and property transportation; within, out, from, and into municipalities.	Certificate of public convenience and necessity; indemnity bond as conditioned by commission.	General control over granting of certificate of public convenience and necessity; regulating service; fixing rates and fares.	
California	1917	Railroad commission.	Passenger and property transportation; out, from, and into municipalities only.	Certificate of public convenience and necessity.	Grant, refuse, suspend, revoke, or amend certificates of public convenience and necessity; prescribe service or extensions thereof; fix rates and fares; supervise fiscal affairs; authorize sale or lease of certificates.	
Colorado	1915	Public utilities comiission.	Passenger and property transportation; within, out, from, and into municipalities.	Permission from municipalities to operate; certificate of public convenience and necessity.	Wide control over issuance of certificates of public convenience and necessity; prescribe service or extensions thereof; fix rates and fares; promote health, safety, and convenience of operation; municipalities may purchase and operate motor-vehicle common carriers.	Special registration fees for passenger-carrying motor vehicles: Seating 9 passengers or less, $20; for each additional seat of capacity, $1.
Connecticut	1921	.....do.....	Passenger transportation only; within, out, from, and into municipalities.	Certificate of public convenience and necessity; indemnity insurance based on seating capacity; range, $5,000 to $10,000 per vehicle.	Grant or withhold certificate of public convenience and necessity; street railroad companies may acquire, own, and operate motor vehicles for hire.	Extra registration fees as follows: Regular fees, plus $15 for vehicle with seating capacity of 5 or less; over 5 but under 21, $2 per seat over 5; 21 but under 41, $5 per seat over 20; 41 or over, $10 per seat over 40.
Florida						Special registration fees: For passenger-carrying vehicles: Seating capacity, 7 or less, $5 per seat; over 7 but less than 17, $7.50 per seat; 17 or over, $10 per seat, in addition to 75 cents per 100 pounds gross weight of vehicle and load. For property-carrying vehicles: $1.50 per 100 pounds gross weight on pneumatic tires; $2.25 per 100 pounds on solid tires.

Digitized by Google

					common carriers, but has not as yet had occasion to exercise this power.	or more, $75.
Illinois	1921	Commerce commission.	Passenger and property transportation; within, out, from, and into municipalities.	Certificate of public convenience and necessity; adequate indemnity insurance or sworn statement of ability to meet any possible damage claims.	Grant, refuse, alter, modify certificates of public convenience and necessity; regulate rates, fares, service, contracts, practices, etc.	Extra State tax: On property-carrying vehicles not operated exclusively within a municipality—gross weight, 12,000 pounds or less, 1 cent per mile; over 12,000 pounds, 2 cents per mile. On passenger-carrying vehicles—gross weight 12,000 pounds or less, one-fifteenth cent; over 12,000 but not more than 15,000 pounds, one-eighth cent; over 15,000 pounds, one-sixth cent per mile.
Louisiana						Special registration fee for passenger carriers: 68 cents per horsepower plus $2 per passenger up to 8; $3 per passenger 8 to 25 $5 per passenger over 25.
Maine	1921	Public utilities commission.	Passenger transportation only; within, out, from, and into municipalities.	Certificate of permission.	Make rules and regulations governing operation; fix fares; regulate routes and schedules, etc.	Extra State registration fee amounting to 100 per over normal fee.
Maryland	1916	Public service commission.	Passenger and property transportation; within, out, from, and into municipalities.	Annual permit	Grant or refuse permits; make rules and regulations governing operation; fix rates, fares, schedules, etc.; provide for safety and convenience of traveling and shipping public.	Special fee, $1.20 per horsepower.
Minnesota						25 per cent extra registration fee for property carrying motor vehicles and passenger carrying motor vehicles seating more than 7 passengers.
Nebraska	1919	State railway commission.	Commission has only asserted jurisdiction over property transportation out, from, and into municipalities.		Commission in 1919 issued an order affecting rates and classifications of property carried by motor-vehicle common carriers out, from, and into municipalities; order rescinded in 1921.	
Nevada	1919	Public service commission.	Passenger and property transportation; within, out, from, and into municipalities.	Certificate of public convenience and necessity; indemnity bond, not less than $500 nor more than $10,000 per vehicle.	Issued or withhold certificate of public convenience and necessity; regulate fares, rates, schedules, classifications; examine books and records; prescribe service; order improvements, additions, etc.	Extra annual tax of $2 per 100 pounds gross weight for operating on first-class highways; $1 per 100 pounds on second class; 25 cents per 100 pounds on other than first and second class.
New Hampshire	1919	.....do.....	Passenger transportation only; within, out, from, and into municipalities.	Permit to operate; indemnity bond of $500 per vehicle plus $100 per person of seating capacity.	Grant or refuse permits; establish reasonable rules and regulations governing operation.	

Digitized by Google

TABLE H7.—*Summary of salient features of State laws regulating motor-vehicle common carriers*—Continued.

State.	Law in effect.	State agency exercising control.	Application of control.	Prerequisites of operation.	General powers of State agency, etc.	Special or extra State taxes.
New Jersey	1921	Board of public utilities.	Passenger transportation only and solely where it parallels street railway lines; within, out, from, and into municipalities; only applicable to lines established after Mar. 15, 1921.	Indemnity bonds of $5,000 by municipalities in which lines operate.	General supervision, regulation, and jurisdiction in the matter of rates, fares, schedules, service, etc.	Special registration fees as follows: 5 passengers or less, $15; 6 to 8 persons, $17.50; 9 to 12 passengers, $20; 13 to 17 passengers, $25; 18 to 22 passengers, $30; 23 to 26 passengers, $35; 27 to 30 passengers, $40; over 30 passengers, $40, plus $2 per seat in excess of 30.
New York	1915	Public service commission.	Passenger transportation only; within, out, from, and into municipalities.	Consent of municipal authorities; certificate of public convenience and necessity; indemity bond as conditioned by the local authorities.	General jurisdiction over rates, fares, schedules, service, etc.	Special registration fees as follows: 5 passengers or less, $15; 6 to 7 passengers, $24.50; 8 to 10 passengers, $30.50; 11 to 16 passengers, $43; 17 to 20 passengers, $52; 21 to 22 passengers, $55; 23 to 26 passengers, $61.50; 27 to 30 passengers, $67.50; over 30 passengers, $67.50, plus $2 per passenger. Schedule not applicable to omnibus operating wholly within municipality under franchise granted by said municipality.
North Carolina						Extra registration fee of 50 per cent over normal fee.
North Dakota	1919	Board of railroad commissioners.	Passenger and property transportation; within, out, from, and into municipalities.		Fix and adjust rates, fares, classifications, schedules, etc.; establish uniform accounts; investigate books, records, methods, etc.	Extra registration fee for passenger-carrying vehicles, 25 cents per passenger of seating capacity, allowing 16 inches of seating space per passenger.
Ohio	1921	Public service commission.	Passenger transportation only; out, from, and into municipalities only.		Fix fares; exercise general supervision over the operation of carrier; regulate general relationship between carrier and public.	
Oregon	1921	....do....	Passenger and property transportation; out, from, and into municipalities only.	Certificate setting forth special terms and conditions under which operation is permitted; indemnity bonds as conditioned by the commission.	Supervisory and regulatory powers on all matters affecting the relationship of carriers; with passengers and shippers, fix reasonable rates, fares, charges, service, facilities, etc.; supervise and regulate accounts; require reports, data, etc.	For passenger carriers, extra registration fee of $4 per passenger, allowing 20 inches of seating space per passenger; for property carriers, extra registration fee of 50 cents per inch of total tire width; in addition, for both passenger and property carriers, an annual fee for administration of motor-vehicle common carrier laws of not more than $10 per vehicle.
Pennsylvania	1911	....do....	Passenger and property transportation; within, out, from, and into municipalities.	Certificate of public convenience and necessity.	Grant or refuse certificates of public convenience and necessity; regulate rates, fares, schedules, equipment, service, etc.; examine accounts and records; require reports, uniform accounting methods, etc.	

Digitized by Google

[illegible]						normal fee.
Texas						Carrying persons or property for hire between municipalities $32 to $160, plus ½ cent to 4 cents per mile traveled, according to net carrying capacity.
Utah	1918	Public utilities commission.	Passenger and property transportation; within, out, from, and into municipalities.	Certificate of public convenience and necessity.	General supervision and regulation; fix rates, fares, tolls, rentals, charges, and classifications; regulate practices, facilities, and methods; establish uniform accounting; make investigations; require reports, etc.	
Virginia						Extra annual tax of $5 per vehicle in cities and towns of less than 5,000 population; $10 per vehicle where population is 5,000 or over.
Washington	1921	Department of public works.	Passenger and property transportation; within, out from, and into municipalities.	Certificate of public convenience and necessity; indemnity bond, $5,000 to $10,000 per vehicle for injury to persons; not over $1,000 for damage to property.	Grant, refuse, suspend, revoke, alter, amend certificate of public convenience and necessity; fix proper rates, fares, charges, classifications, regulations; prescribe equipment, service and safety of operation; regulate accounts; require reports, etc.	Extra annual registration fees: Passenger carriers for vehicles with seating capacity of 8 or less, $10; 50 cents per passenger over 8; for property carriers, $10 for vehicles of 3 tons or less capacity; $1 per ton of capacity over 3 tons.
West Virginia	1921	State road commission.	do	Permit to operate	Grant permits, although no discretionary power is vested in commission; classify vehicles and fix their privilege taxes.	For passenger carriers, extra registration fee, roughly, 100 per cent greater than normal annual fees.
Wisconsin	1915	Railroad commission.	Passenger transportation only; within, out, from, and into municipalities.	Consent of municipality; indemnity bonds as fixed and approved by the commission.	Determine adequacy and reasonableness of fares, routes, and service; district attorney authorized to enforce rules laid down by commission.	Special fee for passenger carriers operating wholly within a municipality, $10 per vehicle, which is in lieu of regular fee.

Digitized by Google

TABLE 110.—*Statement showing the property investment, revenues, and expenses, 11 carriers.*
COASTWISE AND GREAT LAKES.

	1914	1915	1916	1917	1918	1919	1920
Property invested (book value)	$47,938,466	$52,406,065	$57,272,372	$55,607,530	$68,751,083	$71,638,958	$84,947,756
Operating revenue:							
Freight	20,120,642	23,310,915	32,781,032	36,409,235	30,466,789	34,345,175	37,129,269
Total	28,866,325	32,003,387	45,639,628	58,482,360	45,453,860	54,144,595	59,596,757
Operating expenses:							
Maintenance	4,023,664	4,061,248	5,684,539	7,542,500	8,089,903	11,648,388	12,575,828
Transportation	16,110,436	16,928,698	21,627,261	30,420,527	23,886,237	57,943,830	35,073,350
Total	25,176,393	26,421,826	37,528,228	47,256,344	42,667,732	53,351,716	59,221,652
Net operating revenue	3,689,932	5,581,561	8,111,400	11,226,016	2,786,128	792,879	375,105
Taxes:							
Federal	16,507	19,518	41,641	128,612	297,885	379,039	558,116
State	227,402	250,550	306,863	372,381	289,081	278,440	346,788
Total	243,909	270,068	348,504	500,993	577,946	654,479	904,904
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Fuel consumed	967,158	976,880	1,168,048	1,274,745	794,062	994,602	811,210
Commodity tonnage:							
Products of—							
Agriculture	1,010,005	1,283,720	3,473,281	2,219,026	1,780,216	1,532,286	1,817,775
Animals	149,765	207,911	254,554	259,506	247,916	200,958	125,410
Mines	738,986	1,370,096	1,691,320	2,505,782	1,184,516	600,783	769,203
Forests	544,079	690,303	869,118	263,912	228,064	72,194	140,167
Manufactures	1,878,055	2,518,921	2,767,577	1,989,037	1 406,135	896,175	1,148,278
Merchandise and less-than-carload freight	1,382,198	3,094,901	4,065,628	2,425,799	2,206,260	1,498,377	1,491,452
Total	5,703,088	9,165,852	13,121,478	9,663,062	7,053,107	4,800,773	5,492,283

Physical property.	1914		1915		1916		1917		1918		1919		1920	
	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.
Tugboats, steamboats, steamships	181	236,113	181	229,774	236	358,250	224	335,995	220	343,041	189	284,579	166	293,363
Barges, car floats, canal boats [1]	472	.....	474	.....	504	.....	511	.....	529	.....	484	.....	204	.....
Other floating equipment [1]	3	.....	3	.....	4	.....	4	.....	6	.....	6	.....	1	.....
Total	656	.....	658	.....	744	.....	739	.....	755	.....	679	.....	371	.....

[1] Not registered.

Digitized by Google

	1914	1915	1916	1917	1918	1919	1920
Property investment	$37,205,272	$40,808,424	$37,693,579	$37,099,079	$42,665,679	$45,360,417	$38,488,173
Operating revenue:							
Freight	18,340,402	21,066,046	24,680,708	23,663,937	17,745,144	20,501,997	20,948,226
Total	24,362,066	26,895,883	33,413,444	37,905,577	24,820,822	30,222,065	33,143,324
Operating expenses:							
Maintenance	3,233,096	3,221,413	4,253,292	4,654,929	4,592,195	7,414,641	8,200,163
Transportation	13,801,945	14,534,225	16,846,082	19,519,120	15,452,793	20,599,169	18,952,862
Total	21,472,068	22,456,550	28,679,795	31,849,491	24,785,901	32,652,586	35,527,423
Net operating revenue	2,889,998	4,439,338	4,733,649	6,056,086	34,921	[2] 2,430,521	[2] 2,384,099
Taxes:							
Federal	10,510	12,344	23,846	46,448	9,675	31,197	46,091
State	185,065	202,903	230,844	262,108	152,835	108,054	176,038
Total	195,575	215,247	254,690	308,556	162,510	139,251	222,129
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Fuel consumed	824,098	835,050	829,920	788,754	376,902	439,537	450,716
Commodity tonnage:							
Products of—							
Agriculture	1,010,005	1,259,531	1,392,989	733,871	523,997	532,456	205,757
Animals	149,765	173,763	193,991	131,508	81,752	55,515	59,744
Mines	738,986	1,212,275	1,315,798	1,313,671	642,083	330,691	509,696
Forests	544,679	657,922	722,536	163,198	134,987	16,322	75,363
Manufactures	1,878,055	2,347,467	2,350,041	1,445,630	934,125	374,085	511,597
Merchandise	1,382,198	2,614,045	3,734,269	1,660,041	1,620,740	952,142	938,682
Total	5,708,088	8,265,003	9,759,624	5,447,919	3,937,684	2,255,211	2,361,389

Physical property.	1914		1915		1916		1917		1918		1919		1920	
	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.
Tugboats, steamboats, steamships	155	200,900	152	191,028	152	204,563	144	192,186	137	179,444	113	154,950	99	161,675
Barges, car floats, canal boats [1]	472	.....	470	.....	501	.....	508	.....	526	.....	481	.....	201	.....
Other floating equipment [1]	3	.....	3	.....	3	.....	3	.....	5	.....	5	.....	2	.....
Total	630	.....	625	.....	656	.....	655	.....	768	.....	604	.....	302	.....

[1] Not registered.

[2] Decrease.

Digitized by Google

TABLE I10.—*Statement showing the property investment, revenues, and expenses, 11 carriers*—Continued.

PACIFIC COAST.

	1914	1915	1916	1917	1918	1919	1920
Property investment	$3,373,522	$4,072,071	$6,265,599	$5,136,303	$13,927,673	$13,958,407	$13,313,026
Operating revenue:							
Freight	1,230,679	1,474,934	2,763,643	7,384,807	7,535,681	8,933,899	9,535,052
Total	2,107,349	2,523,989	4,182,818	12,658,629	12,314,812	14,763,526	15,033,003
Operating expenses:							
Maintenance	295,060	319,179	561,700	1,869,760	2,283,410	2,894,691	2,746,684
Transportation	1,259,022	1,323,056	904,211	6,415,099	3,919,129	8,653,572	9,460,780
Total	1,898,152	2,056,195	3,359,472	9,102,906	11,342,416	13,984,991	14,549,712
Net operating revenue	209,197	467,794	823,346	3,555,723	972,396	778,535	483,291
Taxes:							
Federal	701	2,098	10,238	26,611	170,820	71,822	10,106
State	13,817	12,680	46,112	57,539	73,175	91,048	106,698
Total	14,518	14,778	56,350	84,150	243,995	162,870	116,804
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Fuel consumed	75,045	72,348	118,869	335,798	241,146	187,368	189,127
Per ton of freight handled	.....	0.122	0.219	0.203	0.178	0.161	0.173
Commodity tonnage:							
Products of—							
Agriculture	.....	10,956	64,307	271,999	156,988	158,603	185,038
Animals	.....	31,852	40,857	116,491	155,922	130,839	52,669
Mines	.....	150,072	227,075	344,639	263,513	203,357	57,615
Forests	.....	31,302	31,963	83,905	83,463	54,411	58,363
Manufactures	.....	36,407	87,618	313,904	358,121	319,186	438,632
Less than carload	.....	331,045	89,335	523,863	335,869	299,827	298,257
Total tonnage	.....	591,634	541,155	1,654,801	1,353,876	1,166,223	1,090,574

Physical property.	1914		1915		1916		1917		1918		1919		1920	
	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.
Tugboats, steamboats, steamships	12	19,899	15	21,032	37	50,404	39	51,712	48	81,484	30	47,516	30	42,055
Barges, car floats, canal boats [1]	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....
Other floating equipment [1]	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....
Total	12	.....	15	.....	37	.....	39	.....	48	.....	30	.....	30	.....

[1] Not registered.

Digitized by Google

	1914	1915	1916	1917	1918	1919	1920
Property investment	$7,359,672	$7,525,570	$13,313,194	$13,372,148	$12,157,731	$12,320,134	$13,146,557
Operating revenue:							
Freight	549,561	769,935	5,336,686	5,360,491	5,185,964	4,909,279	6,645,991
Total	2,396,910	2,583,510	8,043,366	7,918,154	8,318,226	9,159,004	11,420,440
Operating expenses:							
Maintenance	495,508	520,656	869,547	1,017,811	1,213,298	1,339,056	1,625,981
Transportation	1,049,469	1,071,417	3,876,968	4,486,308	4,514,315	4,545,647	6,659,708
Total	1,806,173	1,909,081	5,488,961	6,303,947	6,539,415	6,714,139	9,144,517
Net operating revenue	590,737	674,429	2,554,405	1,614,207	1,778,811	2,444,865	2,275,923
Taxes:							
Federal	5,296	5,076	7,557	55,553	117,390	276,020	501,919
State	28,520	34,967	29,907	52,734	54,071	76,338	64,052
Total	33,816	40,043	37,464	108,287	171,461	352,358	565,971
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Fuel consumed	68,015	69,482	219,259	210,193	176,014	152,697	171,367
Commodity tonnage:							
Products of—							
Agriculture	.....	13,233	2,015,985	1,213,156	1,099,221	841,227	1,426,980
Animals	.....	2,296	19,706	11,507	10,242	14,604	12,997
Mines	.....	7,749	148,447	847,472	281,970	66,735	141,892
Forests	.....	1,079	64,619	16,809	9,614	7,461	5,941
Manufactures	.....	135,047	331,908	231,516	113,889	202,904	198,047
Less carload	.....	149,811	242,034	241,895	249,651	246,408	254,513
Total tonnage	.....	309,215	2,857,124	2,600,550	1,764,488	1,379,339	2,040,370

Physical property.	1914		1915		1916		1917		1918		1919		1920	
	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.
Tugboats, steamboats, steamships	14	15,314	14	17,714	47	103,283	41	82,097	35	82,113	35	82,113	37	89,033
Barges, car floats, canal boats [1]	0	0	0	0	3	.....	3	.....	3	.....	3	.....	3	.....
Other floating equipment [1]	0	0	0	0	1	.....	1	.....	1	.....	1	.....	1	.....
	14	15,314	14	17,714	51	103,283	45	82,097	39	82,113	39	82,113	41	89,033

[1] Not registered.

Digitized by Google

TABLE 111.—*Operating statistics, steamship lines, coastwise and Great Lakes.*

Road and period.	Gross revenue.	Freight revenue.	Net operating income.	Net income available for dividends and appropriations.	Received from consignors.	Tons of freight received from connecting carriers.	Total items carried.	Receipts per ton.
Calendar year 1914:								
Lake lines—								
Cleveland & Buffalo Transit Co	$701,401	$155,681	$97,338	$35,521	$23,897	94,117	118,014	$1.32
Detroit & Cleveland Navigation Co	1,989,466	466,508	471,952	465,073				
Goodrich Transit Co	1,205,599	649,202	65,836	[1] 5,006				
Ocean and Gulf lines—								
Clyde Steamship Co	5,380,108	4,198,328	837,033	368,318			1,542,814	2.72
Mallory Steamship Co	3,538,128	2,769,533	798,589	490,509			662,416	4.00
Merchants & Miners Transportation Co	4,654,142	4,028,324	400,271	[1] 70,575	273,326	1,039,988	1,313,814	3.07
Ocean Steamship Co. of Savannah	2,680,366	1,695,450	379,148	348,297			478,364	3.54
Pacific Steamship Co.[2]	3,500,131	1,738,660	246,704	148,492	307,039	262,582	569,620	3.05
Calendar year 1915:								
Lake lines—								
Canada Atlantic Transit Co	316,213	313,540	6,489	[1] 18,109		321,824	321,824	.97
Cleveland & Buffalo Transit Co	695,633	196,410	92,464	26,437	46,327	106,789	153,126	1.28
Detroit & Cleveland Navigation Co	2,175,754	656,224	555,487	559,092	150,336	109,751	260,087	2.52
Goodrich Transit Co	1,080,501	690,226	7,648	[1] 74,036	184,060	36,584	220,644	3.13
Ocean and Gulflines—								
Clyde Steamship Co	5,849,026	4,649,081	1,324,360	827,666			1,651,551	2.81
Mallory Steamship Co	3,339,402	3,209,304	800,587	395,414			847,151	3.79
Merchants & Miners Transportation Co	5,105,849	4,477,360	902,126	498,992	293,307	1,120,252	1,413,559	3.17
Ocean Steamship Co. of Savannah	3,448,055	2,019,404	1,024,408	990,218	288,923	277,740	566,663	3.56
Pacific Steamship Co.[2]	4,287,293	1,930,829	659,382	301,012	465,921	167,824	633,745	3.05
Calendar year 1916:								
Lake lines—								
Canada Atlantic Transit Co	325,568	322,403	[1] 22,904	[1] 45,723		286,960	286,960	1.12
Cleveland & Buffalo Transit Co	845,797	183,149	158,668	101,029	51,360	61,580	112,940	1.62
Detroit & Cleveland Navigation Co	2,700,178	719,149	723,649	750,007	148,195	96,621	244,816	2.94
Goodrich Transit Co	1,399,047	830,468	149,532	51,612	218,468	43,223	261,691	3.17
Great Lakes Transit Corporation[3]	4,824,787	4,469,328	1,620,612	1,497,441	1,328,394	1,249,489	2,577,883	1.73
Ocean and Gulf lines—								
Clyde Steamship Co	8,095,859	6,766,479	1,563,729	1,065,459			1,755,122	3.86
Mallory Steamship Co	5,089,835	3,968,350	907,708	509,172			907,227	4.37
Merchants & Miners Transportation Co	6,061,068	5,335,387	830,493	448,018	311,585	1,274,110	1,585,695	3.36
Ocean Steamship Co. of Savannah	3,950,261	2,429,874	1,544,539	1,596,204	348,741	296,664	645,425	3.76
Pacific Steamship Co	4,848,111	2,776,042	207,615	[1] 2,822	504,552	247,073	751,625	3.69
Calendar year 1917:								
Lake lines—								
Canada Atlantic Transit Co	336,857	332,228	[1] 77,807	[1] 98,702		231,994	231,994	1.43
Cleveland & Buffalo Transit Co	824,679	206,321	63,528	10,100	61,515	27,148	88,663	2.33
Detroit & Cleveland Navigation Co	2,806,462	928,761	541,585	588,584	135,552	87,791	223,443	4.16
Goodrich Transit Co	1,321,794	870,223	75,918	[1] 19,926	216,087	14,812	230,879	3.77
Great Lakes Transit Corporation	4,566,074	4,246,012	880,024	728,113	1,458,804	948,815	2,382,918	1.82

Digitized by Google

Mallory Steamship Co	6,598,719	3,089,468	1,601,787	1,225,789				
Merchants & Miners Transportation Co	5,237,782	4,747,805	[1] 111,472	[1] 394,423	516,931	742,682	1,259,613	3.77
Ocean Steamship Co. of Savannah	4,432,524	2,719,616	1,127,491	1,131,226	433,465	230,721	664,186	4.09
Pacific Steamship Co	8,582,853	5,018,679	1,656,988	129,659	1,021,871	123,584	1,145,455	4.38
Calendar year 1918:								
Lake lines—								
Canada Atlantic Transit Co	276,784	269,316	[1] 32,552	[1] 50,870		178,716	178,716	1.51
Cleveland & Buffalo Transit Co	987,033	321,601	146,667	94,074	63,366	19,007	83,273	3.90
Detroit & Cleveland Navigation Co	3,098,796	1,327,910	445,659	503,991	188,040	33,261	221,301	6.00
Goodrich Transit Co	1,223,595	786,337	109,483	48,066	121,280	3,643	124,923	6.29
Great Lakes Transit Corporation	4,646,518	3,636,565	1,127,435	1,035,625	710,146	782,966	1,493,112	2.44
Ocean and Gulf lines—								
Clyde Steamship Co	6,466,404	5,059,371	365,272	389,419				
Mallory Steamship Co	2,872,209	1,553,583	[1] 50,509	[1] 42,903				
Merchants & Miners Transportation Co.[4]	2,830,066	2,591,934	[1] 743,625	[1] 742,483	331,311	154,251	485,562	5.34
Ocean Steamship Co. of Savannah	3,981,528	2,630,536	355,205	437,808	283,352	201,355	484,707	5.43
Pacific Steamship Co	8,639,135	5,184,904	699,209	[1] 114,102	681,177	230,955	912,133	5.68
Calendar year 1919:								
Canada Atlantic Transit Co	210,869	200,076	[1] 91,341	[1] 105,078		132,801	132,801	1.51
Cleveland & Buffalo Transit Co	1,522,444	396,031	290,032	246,307	102,593	18,430	121,023	3.27
Detroit & Cleveland Navigation Co	4,591,097	1,649,268	1,008,242	1,109,861	204,616	32,955	237,571	6.94
Goodrich Transit Co	1,714,377	1,012,124	221,409	165,880	136,386	5,677	142,063	7.12
Great Lakes Transit Corporation	3,848,122	3,058,964	872,217	819,520	409,017	697,302	1,106,319	2.76
Ocean and Gulf lines—								
Clyde Steamship Co	11,694,063	8,548,034	71,744	[1] 164,080				
Mallory Steamship Co	5,113,672	3,054,248	348,836	281,041				
Ocean Steamship Co. of Savannah	3,337,886	2,358,152	[1] 1,420,371	[1] 1,407,247	222,159	160,316	382,475	6.17
Pacific Steamship Co	9,880,379	6,289,434	[1] 268,117	[1] 1,025,066	708,071	106,128	814,200	7.72
Calendar year 1920:								
Lake lines—								
Canada Atlantic Transit Co	317,428	296,331	[1] 119,358	[1] 135,298	3,500	166,308	169,808	1.75
Cleveland & Buffalo Transit Co	1,860,893	475,455	207,263	263,105	101,994	9,217	111,211	4.28
Detroit & Cleveland Navigation Co	5,049,667	1,805,178	729,996	807,132	211,664	22,397	234,061	7.71
Goodrich Transit Co	1,908,624	1,062,597	217,589	165,461	125,631	8,975	134,606	7.89
Great Lakes Transit Corporation	5,513,170	4,543,467	898,884	815,080	1,035,273	716,467	1,751,740	2.59
Ocean and Gulf lines—								
Clyde Steamship Co	12,069,835	6,761,305	1,042,846	757,205				
Mallory Steamship Co	5,708,972	3,695,907	[1] 990,038	[1] 1,274,081				
Merchants & Miners Transportation Co	5,925,172	5,121,588	[1] 1,109,155	[1] 1,302,947	417,467	309,335	726,802	7.05
Ocean Steamship Co. of Savannah	2,800,331	1,899,659	[1] 1,049,615	498,980	159,908	252,769	412,677	4.60
Pacific Steamship Co	10,557,638	6,675,462	765,208	47,230	745,447	115,485	860,933	7.75

[1] Deficit.
[2] Prior to October, 1916, was the Pacific Coast Steamship Co.
[3] Did not file prior to 1916.
[4] Did not file in 1919.
The Morgan Line does not file report with the Interstate Commerce Commission.

Digitized by Google

TABLE 125.—*Lake shipments and receipts of bulk freight and package freight, by commodities, at 111 United States ports combined, on the Great Lakes, 1889–1918, inclusive (short tons).*

Commodity.	1889	1891	1893	1895	1897	1899	1900	1901	1902	1903	1904
SHIPMENTS.											
Bulk freight:											
Iron ore	7,677,107	6,732,775	5,933,028	10,513,013	12,987,288	20,482,888	21,029,730	21,897,009	29,796,050	25,716,104	22,769,938
Copper ore	.....	29,655	21,272	75,922	51,072	.....	68,349	141,429	157,370	158,064	155,730
Coal (hard)	.....	3,884,737	3,330,533	4,273,957	3,282,116	3,968,511	2,924,036	3,310,323	933,942	3,931,693	3,459,212
Coal (soft)	6,105,799	3,434,349	4,783,228	4,593,292	5,957,447	7,306,335	8,655,743	6,170,218	8,699,024	9,396,333	9,344,393
Coke	.....	98,895	38,453	30,050	.....	.....	581	.....	.....	.....	.....
Coal (bunker)	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,479,778	1,321,619
Wheat	.....	2,432,192	1,041,602	1,716,000	3,390,259	2,859,887	2,334,617	1,928,999	1,661,163	1,127,196	842,563
Corn	.....	331,596	554,512	579,261	362,146	599,211	870,356	979,335	739,641	1,542,886	1,094,665
Oats	.....	351,448	609,707	681,919	811,650	596,323	491,499	471,896	296,461	616,509	512,545
Barley	.....	339,209	612,117	631,943	738,342	503,585	491,399	224,948	281,863	341,124	459,517
Rye	.....	286,738	563,360	166,157	627,206	197,372	339,989	50,051	140,097	124,832	84,859
Flaxseed	2,898,764	81,416	162,056	50,411	333,168	141,065	84,765	301,480	367,935	418,787	334,289
Stone, sand, etc	.....	1,009,888	231,569	296,895	339,628	134,118	223,519	.....	.....	.....	.....
Limestone	.....	.....	.....	6,170	.....	.....	.....	.....	.....	.....	.....
Total bulk	16,681,670	19,012,898	18,781,437	23,615,090	28,880,322	36,789,795	39,025,900	35,484,688	43,073,546	44,353,306	40,429,330
Package freight:											
Cement, brick, lime	.....	144,402	166,083	162,556	244,217	258,536	490,672	.....	.....	.....	.....
Canned goods	.....	3,098	1,102	.....	.....	1,225	.....	.....	.....	.....	.....
Fruits and vegetables	.....	54,005	113,088	64,559	91,016	120,917	151,045	.....	.....	.....	.....
Petroleum and other oils	.....	51,751	36,770	40,988	42,113	59,882	20,180	.....	.....	.....	.....
Salt	252,837	412,797	425,464	487,195	558,520	210,620	474,571	678,479	605,832	546,263	524,467
Flour	.....	1,364,034	1,252,360	1,388,662	1,754,859	1,532,735	844,697	1,402,814	1,629,239	1,515,129	1,041,770
Lumber	5,348,398	3,754,884	4,867,207	4,219,728	3,884,294	4,080,554	2,990,337	2,364,043	2,806,663	3,020,710	3,631,343
Pulp wood	.....	14,500	150	3,852	4,687	.....	.....	.....	.....	.....	.....
Wood or timber	.....	1,096,697	487,203	1,000,708	1,048,193	465,371	342,685	.....	.....	.....	.....
Manufactured iron	.....	87,618	79,028	244,857	245,621	297,444	173,780	407,692	390,404	312,645	232,204
Pig iron	.....	106,028	97,628	69,449	108,589	38,704	21,564	259,941	247,072	206,376	150,868
Fish	.....	5,418	11,055	8,970	8,861	4,364	4,580	.....	.....	.....	.....
Live stock	.....	8,323	73,180	2,267	2,944	3,257	1,607	.....	.....	.....	.....
Unclassed	2,984,069	2,154,165	2,462,056	1,835,060	2,302,472	2,757,406	1,916,151	4,550,763	6,293,880	6,380,610	5,041,363
Total package	8,585,304	9,257,713	10,072,384	9,528,851	10,296,386	9,831,515	8,943,181	9,653,732	11,972,090	11,981,733	10,622,015
Grand total	25,266,974	28,270,611	28,853,821	33,143,914	39,176,708	46,621,310	.....	45,138,420	55,045,636	56,335,039	51,051,345

Digitized by Google

RECEIPTS.

Bulk freight:											
Iron ore	7,626,073	6,285,986	5,977,330	8,471,001	13,098,310	18,084,721	19,866,372	21,761,091	29,796,033	25,711,211	22,822,759
Copper ore				34,952				142,296	161,899	159,152	146,074
Coal (hard)		1,114,715	1,135,429	1,961,496	1,888,127	2,344,180	1,587,127	3,371,254	938,860	3,829,389	3,463,102
Coal (soft)	5,162,471	4,531,069	5,901,335	3,894,907	4,856,997	6,530,284	3,681,684	5,834,510	7,317,257	9,516,954	9,568,941
Coke			16,500		8,223						
Coal (bunker)											
Wheat		2,735,063	2,339,413	1,684,380	2,658,708	1,907,199	1,704,850	1,908,970	1,772,986	1,130,142	839,622
Corn		1,003,586	1,486,232	1,227,735	1,933,521	1,835,108	2,178,978	1,039,570	732,989	1,544,712	965,720
Oats		273,405	244,583	473,156	1,215,217	487,305	558,965	483,713	310,129	595,999	453,324
Barley		232,228	249,850	369,687	472,797	450,509	342,907	203,547	277,859	333,907	458,606
Rye		236,364	237,032	44,898	318,888	129,687	81,434	59,164	140,593	151,058	81,052
Flaxseed	2,503,063	207,920	153,716	113,607	252,075	253,511	220,293	333,841	376,308	417,054	363,856
Stone, sand, etc		309,542	520,248	561,586	893,740	957,374	936,602				
Limestone		28,720	38,171	51,733	32,920	33,730	138				
Total bulk	15,291,607	16,958,600	18,300,139	18,897,361	27,621,200	33,013,608	34,109,689	35,137,956	41,824,913	43,389,578	39,158,258
Package freight:											
Cement, brick, lime		307,443	352,494	269,112	310,920	325,795	418,856				
Canned goods			34								
Fruits, vegetables		9,375	18,084	73,856	19,391	86,396	85,657				
Petroleum and other oils		9,061	11,260	58,630	70,241	31,563	63,562				
Salt	296,513	300,223	373,193	613,856	555,704	526,586	423,477	666,692	625,220	543,514	516,929
Flour	2,320,312	681,271	1,396,818	2,046,285	1,398,552	1,484,166	1,425,702	1,676,555	1,541,853	937,090	
Lumber	6,857,257	6,727,453	4,283,556	5,491,743	4,589,285	4,869,457	3,688,370	2,662,944	2,672,036	3,841,484	4,248,557
Pulp wood			15,770	69,035	135,074	134,314	86,218				
Wood or timber		804,426	2,976,447	1,837,165	2,823,219	1,655,291	746,529				
Manufactured iron		67,080	98,420	191,971	226,365	432,452	107,379	402,855	407,789	321,709	225,980
Pig iron		74,239	13,915	103,319	111,634	94,719	110,841	234,885	253,697	210,651	192,739
Fish		85,469	15,509	17,091	18,731	33,935	17,524				
Live stock		3,379	2,240	3,347	348	388	254				
Unclassed	3,490,755	3,307,546	2,591,216	3,054,853	3,146,156	3,729,129	5,179,957	4,475,985	6,612,519	6,395,444	4,926,487
Total package	10,644,525	14,016,006	11,433,409	13,180,796	14,053,353	13,318,577	12,412,790	9,869,063	12,249,816	12,854,655	11,047,782
Grand total	25,936,132	30,974,606	29,733,549	32,078,157	41,674,553	46,332,185	46,522,479	45,007,019	54,674,729	56,244,233	50,206,038

Digitized by Google

Commodity.	1905	1906	1907	1908	1909	1910	1911	1913	1915	1916	1918
SHIPMENTS.											
Bulk freight:											
Iron ore	36,621,370	41,297,209	45,615,329	27,931,887	45,620,598	48,295,405	34,855,650	56,287,121	51,587,549	72,614,761	68,043,785
Copper ore	134,947	130,552	119,498	135,693	167,614	65,048	142,075				
Coal (hard)	3,398,981	3,087,227	4,079,177	4,189,672	3,616,063	5,147,123	4,374,100	6,466,351	5,472,340		4,808,374
Coal (soft)	9,489,057	12,484,787	15,428,309	13,204,009	13,630,900	22,952,640	17,081,355	30,017,799	23,753,532	30,179,847	31,358,023
Coke								24,880	19,939		191,087
Coal (bunker)	1,777,837	2,003,903	2,107,231	1,477,902	2,021,393	1,574,366	1,092,846	1,311,738	1,133,544		1,560,372
Wheat	1,819,619	1,431,803	1,900,488	1,732,625	1,683,439	1,250,391	1,268,775	2,726,306	3,327,102		3,168,732
Corn	1,329,832	1,218,883	1,241,968	631,310	810,733	1,240,083	1,320,174	1,056,403	953,006		193,422
Oats	613,380	538,209	330,883	251,222	285,259	351,017	441,007	479,045	506,249		935,092
Barley	432,687	438,054	325,538	324,388	339,304	328,768	243,882	377,875	361,325		110,631
Rye	33,336	62,359	61,220	47,470	32,704	31,669	61,263	75,014	179,596		202,777
Flaxseed	427,329	521,888	438,130	437,086	276,736	200,999	127,124	473,152	97,965	5,969,521	97,595
Stone, sand, etc						836,086		902,731	2,553,011	7,506,452	5,781,643
Limestone						852		1,240,510	2,615,401		
Total bulk	55,278,375	63,214,874	71,647,771	50,363,264	68,484,743	82,274,397	61,606,251	101,488,916	92,560,919	116,270,581	116,451,538
Package freight:											
Cement, brick, lime						696,646		280,463	345,080	199,913	197,928
Canned goods						238		188	515	14,951	
Fruits and vegetables						69,341		73,842	89,869	117,906	36,596
Petroleum and other oils						305,834		505,282	629,716	314,959	667,478
Salt	564,550	567,986	558,288	619,788	561,829	444,920	450,502	335,278	312,405		304,584
Flour	1,257,096	1,334,979	1,314,987	1,188,831	1,248,891	1,152,025	1,152,807	1,248,904	1,471,797	1,085,290	1,019,239
Lumber	3,714,751	3,615,140	2,670,566	1,889,485	2,311,530	2,158,134	2,329,088	1,764,246	1,523,943	1,629,756	971,329
Pulp wood						71,678		51,196	125,338		78,874
Wood or timber						337,929		210,626	159,743		78,711
Manufactured iron	462,506	620,563	555,229	325,207	680,554	478,533	393,100	399,226	431,137		422,048
Pig iron	312,837	414,110	231,772	101,256	153,055	133,989	106,548	51,285	105,759	184,188	162,333
Fish						4,204		6,918	9,910		8,088
Live stock						190		674	234		26
Unclassed	5,755,505	5,843,038	6,528,378	6,030,193	7,534,003	4,211,136	8,270,723	3,895,187	3,514,874	5,566,498	2,879,338
Total package	12,067,245	12,395,816	11,859,220	10,154,760	12,489,852	10,064,797	12,702,768	8,814,375	8,721,320	9,113,461	6,826,572
Grand total	67,345,620	75,610,690	83,506,991	60,518,024	80,974,605	92,339,194	74,311,019	110,303,291	101,282,239	125,384,042	123,278,105

Digitized by Google

Iron ore	36,608,885	41,318,928	45,571,731	27,929,009	45,001,227	45,603,216	34,852,843	53,906,047	50,817,024	72,614,761	66,892,714
Copper ore	132,650	140,375	117,783	135,525	167,736	9,775	142,075	9,363	15,732	.....	.....
Coal (hard)	3,333,804	2,960,606	4,062,184	4,186,401	3,610,863	3,856,134	4,365,470	4,549,287	4,675,502	.....	3,516,208
Coal (soft)	9,580,702	12,578,008	15,406,026	13,174,394	13,628,294	17,864,598	17,080,184	18,982,561	17,069,600	30,179,847	20,640,697
Coke	.....	.....	.....	.....	.....	.....	.....	358	5,000	.....	977
Coal (bunker)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheat	1,028,045	1,459,029	1,873,703	1,689,687	1,649,508	1,600,530	1,255,408	4,262,791	5,774,507	.....	2,270,949
Corn	1,143,676	981,075	1,068,043	504,141	661,241	771,859	1,063,842	731,818	708,732	.....	108,644
Oats	542,785	518,984	320,318	251,095	285,587	373,305	360,920	495,078	377,960	.....	428,667
Barley	437,551	443,924	326,407	324,934	339,298	386,249	243,882	459,247	461,240	.....	149,264
Rye	33,804	60,861	60,375	47,330	32,704	52,421	61,263	39,105	226,840	.....	228,445
Flaxseed	427,328	514,786	438,385	437,386	270,996	147,630	127,124	711,285	185,493	5,969,521	103,537
Stone, sand, etc	.....	.....	.....	.....	.....	1,905,421	.....	3,471,221	2,910,131	7,506,452	6,809,271
Limestone	.....	.....	.....	.....	.....	279,152	.....	507,595	1,482,577	.....	3,683,946
Total bulk	53,269,230	60,996,176	69,244,755	48,715,602	66,247,409	72,650,290	55,553,511	89,125,756	84,710,338	116,270,581	104,833,319
Package freight:											
Cement, brick, lime	.....	.....	.....	.....	.....	272,478	.....	159,157	263,956	199,913	125,486
Canned goods	.....	.....	.....	.....	.....	351	.....	.....	.....	14,951	.....
Fruits, vegetables	.....	.....	.....	.....	.....	23,042	.....	21,424	22,597	117,906	27,253
Petroleum and other oils	.....	.....	.....	.....	.....	69,222	.....	294,962	231,568	314,959	567,084
Salt	547,839	554,811	560,268	619,622	560,392	546,930	450,870	401,495	408,325	.....	378,630
Flour	1,237,347	1,338,189	1,313,895	1,186,781	1,231,331	1,806,804	1,150,497	260,892	304,533	1,084,290	1,022,056
Lumber	3,758,540	3,466,875	2,755,613	1,888,456	2,309,203	2,833,130	2,327,850	2,343,110	2,145,593	1,629,756	1,482,824
Pulp wood	.....	.....	.....	.....	.....	291,689	.....	496,983	446,185	.....	619,197
Wood or timber	.....	.....	.....	.....	.....	223,086	.....	173,498	176,479	.....	67,707
Manufactured iron	420,072	610,104	548,508	319,038	674,326	461,523	391,041	407,788	485,769	138,188	338,845
Pig iron	308,955	431,078	229,644	101,158	152,993	137,743	106,597	78,515	83,535	46,000	114,885
Fish	.....	.....	.....	.....	.....	37,968	.....	30,800	47,577	.....	41,243
Live stock	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unclassed	5,843,158	5,783,693	6,471,004	6,078,688	7,577,213	4,330,028	8,340,178	5,223,903	4,954,629	5,566,498	3,335,575
Total package	12,125,931	12,187,350	11,875,932	10,193,743	12,509,358	10,334,026	12,767,033	9,901,397	9,576,989	9,113,461	8,122,039
Grand total	65,395,161	73,183,526	81,123,687	58,909,345	78,752,767	82,984,316	72,320,544	99,027,153	94,287,327	125,384,042	112,955,358

Digitized by Google

Digitized by Google

INDEX.

Page.

Agriculture:
- Dependent upon transportation 310
- Persons engaged in 282

Agricultural implements:
- Amount of corn required to purchase 160, 161, 163, 165
- Amount of freight involved in manufacture and sale 164–166
- Amount of hogs required to purchase 168
- Amount of wheat required to purchase 162, 165
- Car supply for shipment 171
- Conversion of corn into hogs 169, 170
- Cost to farmer 159
- Distribution methods 157
- Freight costs 159, 160
  - On corn 164, 169
  - On raw materials 156
  - On wheat 165, 166
  - On hogs to Chicago 168, 170
- Incidental services of manufacturers 157
- Prices 156
- Price of corn and wheat, Chicago 160
- Production 156
- Purchase with corn 157, 158, 167
- Purchase with hogs 167, 168, 170
- Purchase with wheat 157, 158, 167
- Relationship of freight costs to farmers purchasing power 157

Agricultural products, loading of 592–596, 628–631

American Railway Express Co.:
- Organized 321
- Second-class rates 473

American Refrigerator Transit Co 237

Animals, loading of products 592–596, 628–631

Area of United States 227

Average miles per car per day 209

Barbed wire:
- Freight rates 178
- Relationship of freight costs to prices 177, 178

Barley (*see* Grain).

Barley, relationship of freight costs to prices 99

Beef:
- Changes in freight rates 131
- Freight rate increases 130
- History of freight rates 132
- Spread in prices between price of cattle and price of beef 129
- Value of by-products 129

Benefits of unified operation 330

Book value road and equipment 219, 220, 226, 344

Boots and shoes, relationship of freight costs to prices 204, 205

Bureau of service 309

Butter:
- Amount shipped to Chicago 135
- Effect of freight costs on prices 134, 135
- Freight rates 134
- Prices to producer 134
- Production 133
- Receipts at 4 important markets 133, 134
- Reduction in freight rates 134
- Source of production 133
- Transportation in refrigerator cars 134

Digitized by Google

Page
Canadian railways:
Effect of United States policies ... 38
Increases in freight rates ... 45
Financial statement ... 45
Canadian national railway systems ... 45
Canned goods:
Car supply ... 7
Deflation ... 7
Radius of distribution ... 7
Relationship of freight costs to prices ... 7
Canneries, total number ... 7
Canning industry, output ... 78, 7
Capacity of cars owned ... 566, 56
Car loading ... 22, 105, 272, 274, 277, 279, 8
Car miles ... 209, 276, 601, 61
Car service ... 256–268, 309, 46
Caretakers:
For live stock in transit ... 10
Of live stock; free transportation ... 11
Cars owned ... 235, 237, 324, 564, 56
Capacity of ... 235, 56
Of steel construction ... 56
Cement:
Amount used for concrete highways ... 20
Average rail haul ... 20
Freight rates on raw materials ... 20
Price trends ... 20
Production and use ... 200, 20
Relationship of prices and freight costs ... 20
Shipments annually ... 20
Central control of refrigerator-car supply ... 2
Central control of cars ... 26
Central terminals for fruits and vegetables ... 2
Cheese:
Amount shipped to Chicago ... 13
Concentration points ... 138, 13
Freight rates and distances ... 13
Prices ... 13
Production ... 136, 137, 13
Quantity and value produced in factories ... 13
Receipts at principal markets ... 13
Relationship of freight costs to prices ... 13
Classification of steam railroads ... 21
Coal:
Anthracite—
Advances in freight rates ... 186, 18
Average retail prices ... 18
Domestic consumption ... 18
Freight rates to New England ... 18
Preparation for market ... 185, 18
Prices under Government control ... 18
Relationship of freight costs to prices ... 185, 18
Royalties Girard lease ... 18
Bituminous—
Average retail prices ... 18
Competition between coal-producing groups ... 18
Consumption by the farmer ... 17
Dealers' margin ... 18
Distribution by classes of consumers ... 18
Distribution by routes and destinations ... 54
Exports ... 18
Fuel reserve upper Lake docks ... 18
Increase in prices ... 18
Location of supply and distribution ... 17
Marketing grades ... 180–18
Movement via Lake Erie ... 17
Prices and freight costs ... 18
Receipts of coal at Duluth-Superior ... 17

Digitized by Google

—Continued.
Bituminous—Continued. Page.
Retail dealers ... 183
Shipments from docks, Duluth-Superior ... 179
Stocks in hands of consumers ... 183
Wages of labor ... 185
Dumped into boats at Lake Erie ports ... 247, 248
movement through ports ... 246
pools ... 248
production ... 108
Relationship of freight costs to prices ... 550
production ... 172
nerce, national in character ... 414
nittees, loss and damage ... 211
nodity:
Price index ... 209, 303
Loading ... 628
parison of rates:
On cheese ... 16
On dressed poultry ... 15, 16
On eggs ... 15
On grain ... 15
On live stock ... 12–14
On wool ... 16
pensation of labor ... 185, 325, 329, 345
pany service cars in service of Class I railroads ... 580
ensed milk:
Effect of freight costs on distribution ... 143
History of freight rates ... 144
Methods of preparation ... 139, 140
Methods of shipment ... 140
Movement through Panama Canal ... 143
Prices and freight rates ... 140–142
Varieties ... 139
estion at stockyards ... 112
olidation of express companies ... 321
(*see* Grain).
, relationship of freight costs to prices ... 99, 100
of living ... 303
on ... 100
Change in distribution ... 101
Consumption ... 100, 101
Cost of production ... 102
Decline in production ... 103
Deflation of prices ... 102, 103
Distribution ... 101
Freight charges ... 102
Handled Mississippi and Warrior Rivers ... 384
Handled Mississippi River ... 385
Local buying by southern mills ... 102
Production ... 100
Relation of freight costs to commodity prices ... 102, 506, 513
Summary of States leading in importance in manufacture of cotton goods ... 101
on piece goods, relationship of freight rates to prices ... 207
ntry grain elevators ... 80
ry products, value ... 131
line in prices ... 403
lation in prices of canned goods ... 79
line in prices, fertilizer ... 151
initions of terms used in railroad statistics ... 470
lation in values of petroleum products ... 199
lation of cotton prices ... 102, 103
erioration and damage of fruits and vegetables in transit ... 28
crimination by vessels ... 419
tribution of freight cars ... 255
tribution:
Canned goods ... 79
Cement ... 202

Digitized by Google

Distribution—Continued. Page.
Cheese ... 139
Coal ... 180, 547
Cotton ... 101
Fruits and vegetables ... 22
Hay ... 105
Perishables ... 22, 238
Petroleum products ... 200
Poultry ... 144
Double-deck stock cars ... 236
Dry goods:
Freight rates ... 206
Relationship of freight rates to prices ... 206
Economic relationship of agriculture, industry, and transportation ... 9
Efficiency of railroads ... 226
Eggs:
Amount shipped to Chicago ... 147
Average farm prices ... 148
Containers ... 150
Farm prices ... 148, 149
Farmers' Cooperative Association ... 148
Grading and marketing ... 147, 148
History of freight rates ... 149
Inspection recommended ... 149
Loss and damage in transit ... 149
Packing and stowing for shipment ... 149
Production ... 147
Receipts and prices, Chicago and New York ... 148
Receipts at four leading markets ... 149
Electric lines perform important transportation service ... 347
Electric railways ... 339
Capitalization ... 346
Car-mile averages ... 342
Construction costs ... 344
Encroachment of motor transportation ... 345
Financial condition ... 346
Freight traffic ... 346
Growth ... 344
Interchange of traffic with steam lines ... 346
Interurban lines ... 339
Operation of—
Interurban lines ... 345
Street railways by electricity ... 339, 344
Power plant equipment ... 344
Rates of pay ... 344, 345
Road and equipment investment in ... 344
Sale of current ... 344
Statistics ... 340, 341
Track mileage ... 344
Valuable service rendered ... 345, 346
Elevators, primary markets ... 81
Employees, Class I railroads:
Number of ... 633
Hours or days worked ... 634
Aggregate compensation ... 635
Wage reduction of July 1, 1921 ... 636
English railways:
Deficit during Government control ... 427
Development ... 426
Governmental control ... 425
Increased rates ... 427
Mileage ... 425
Multiple tracks ... 426
Operating statistics ... 427
Postwar conditions ... 427
Revenues and expenditures ... 427
Switching service ... 280
Value of Government-controlled lines ... 426

Digitized by Google

Page.
Evaporated milk 140
Express companies. (*See* Railway express.)
Express handled in passenger trains 321
Express rates 17, 473, 480, 481
Express service on electric railways 330
Extension of railroads 219
Farm labor, wages 303
Federal and State regulation:
Amendments to act, 1920 396
Authority of States subordinate during Federal control 413
Boards of adjustment 409, 410
Carmack amendment 395
Car service act, 1917 396
Car service powers of Interstate Commerce Commission 401
Classification of statistics 400
Coastwise traffic 419
Comprehensive study of all transportation facilities 399
Conditions of railroad service 404
Consolidation of railroads 405
Constitutional provisions on interstate commerce 394, 413
Constitutional provisions, intrastate commerce 413
Control of expenditures for improvement of inland waterways 419
Control of revenues and costs 409
Coordination of statistical methods of departments of Government 400
Correlation of transportation facilities 399
Cummins amendment—
1915 396
1916 396
Decline in prices 403
Definite policy for basic legislation 393
Delay in application of reductions in through rates 400
Development of Federal regulation 394
Development of waterways to create competition 419
Division of freight rates complicated 401
Division of joint rates 400
Division sheets 401
Elkins law, 1903 395
Equitable divisions 400
Federal control act—
1916 396
1918 396
Federal inspection live stock 109
Federal law feed and rest of live stock 111
Fourth section—
Act to regulate commerce 405
Amendment of June 18, 1910 405
Circuitous route competition 408
Market competition 407
Mileage basis 401
Port competition 408
Strong-line competition 409
Water competition 406
Freight rate divisions 400
Freight rates, rail and water 412
Function of Government 411
Governmental regulation of railroads 393
Granger laws 394
Hepburn law, 1906 395
Inconsistencies in legislation 413
Increase in costs 403
Increase in freight rates 403
Inland waterways development to supplement existing facilities 419
Interstate commerce act, 1887 394
Interstate Commerce Commission, creation of, 1887 394

Digitized by Google

Federal and State regulation—Continued.
Labor—
Page.
Data to be assembled by governmental body ... 41
Disputes ... 40
Interruption of transportation service ... 41
Relation of carriers and employees ... 41
Labor Board—
Disputes between carrier and employees ... 41
Initiates schedules of wages and working conditions ... 40
Organization ... 40
Lower rates to Pacific coast ... 39
Mann-Elkins law, 1910 ... 39
Minimum rates ... 42
Panama Canal act, 1912 ... 39
Prevention of car shortages ... 40
Prices and freight rates ... 40
Priority of shipment act, 1917 ... 39
Private management of railroads v. Government operation ... 39
Private management under governmental regulation ... 39
Railroad credit ... 40
Rate advances ... 40
Rate of return to railroads ... 402, 404
Rebating ... 394
Recapture provision ... 404
Regional agencies of Interstate Commerce Commission ... 415
Regulation of motor transportation ... 41
Regulation under State laws ... 39
Relation between revenues and expenses ... 40
Relation of rates to prices ... 40
Relation of Federal and State regulations ... 413
Relation of transportation facilities ... 39
Requirements of State laws and State commissions ... 413
Rule of rate making ... 402
Sections 2 and 3, interstate commerce act ... 420
Section 6, interstate commerce act ... 412
Section 15a ... 402
Section 19, merchant marine act, 1920 ... 412
Section 28, merchant marine act ... 413
Section 300, transportation act ... 409
Section 307, transportation act ... 410
Section 500, transportation act ... 420
Shipping Board—
Position with respect to section 19, merchant marine act ... 413
State control of commerce, importance in matters of local concern ... 414
State legislation—
Conflicts of legislation ... 415
Full crew laws and length of trains ... 415
Full crew laws—
Increase in operating costs ... 418
Repealed, Missouri, Pennsylvania, Indiana ... 416
State of California ... 415
State of Maine ... 416
State of Nevada ... 415
State of New Jersey ... 416
State of New York ... 415
State of Oregon ... 415
State of Washington ... 415
Lack of uniformity ... 416, 418
Regulation of motor transportation ... 416, 418
Statistical information should be secured and correlated ... 400
Steamship service via canal ... 406
Supreme Court Wisconsin case decision ... 415
Transportation ... 393
Transportation act, 1920 ... 315, 393, 396, 404, 405, 412, 414, 415
Transportation act, 1920, changes proposed ... 316, 432
Transportation act, 1920, cooperation of State and Federal regulation ... 415

Digitized by Google

ral and State regulation—Continued. Page.
Transportation a public function 393
Transportation governed by rigid governmental regulations 393
Through routes 400
Valuation act, 1913 395
Valuation of carriers 403
Wages—
Considerations provided by law 410
Level of rates 410
War Department, commercial feasibility of waterways 419
ilizer:
Average freight cost 153
Average prices 154
Consumption 150
Decline in prices 150, 151
Effect of aid by Federal Government 155
Freight rates 153
Freight rate increases, central West 156
History of freight rates 154
Prices, Carteret, N. J 151
Production in by-product coke ovens 173
Ratio of freight cost to values 154
Relationship of freight costs to prices 153
Situation in New England 155
Source of ingredients 151, 152
Spring prices southern territory 151
Typical producing points 152
ir. (*See* grain.)
e handled, Mississippi River 385
ign railways:
Readjustments due to war 431
Sources of information 431
ign railway systems 424
sts, loading of products 592–598, 628–631
ght cars:
Installed and retired 590
Owned and operated 235, 237, 324, 585, 586
Owned, capacity of 587, 589–589
ght claims 207
ght rates 12–16, 116, 317, 359, 361, 389, 400, 401, 403, 404, 406. 414
Barbed wire 178
Beef 130–132
Butter 134, 478
Cattle 115, 131, 132
Cement 202
Cheese 139, 478
Citrus fruits 477
Coal 182, 184, 187
Condensed milk 140, 144
Cotton 102
Dressed poultry 478
Dry goods 206
Eggs 149, 478
Fertilizer 152, 153
Fruits and vegetables 31, 32, 475, 476
Gasoline 199
Grain 87, 88, 92, 94, 100, 164, 165, 166, 169
Hay 106
History of condensed-milk rates 144
History of live-stock rates 115
Hollow tile 203
Iron and steel 176, 177
Kerosene 199
Live stock 115
Lumber 189, 190
Meats 128
Oranges 53, 54
Paper 193, 194

Digitized by Google

Freight rates—Continued. Page.
Packing-house products 132
Petroleum products 199
Shingles 191, 192
Shoes 205, 206
By water 419
Wire nails 178
Freight revenues 208, 216, 380, 384
French railways:
Car shortage 428
Destruction during war 428
Financial condition 429
Government owned 428
Increases in rates 429
Mileage 428
Operating statistics 428
Fruit Growers' Express 237
Fruits and vegetables:
Amounts received by shipper 31, 32
Apples—
Barreled 32, 33
Box 33, 34
Carload shipments by States 57
Exported annually 59, 61
Exported from United States and Canada 60, 61
Production 55–57
Western boxed 20
Yearly unloads at 10 markets 58
Asparagus, production 61, 62
Average load per car 19
Cabbage—
Carload shipments by States 63
Northern 34, 35
Southern 35
Production 62
Texas 36
Yearly unloads at 10 markets 63
California—
Cantaloupe 36, 37
Cauliflower 38, 39
Oranges 52–55
Cantaloupes—
Carload shipments by States 64
Production 63, 64
Cauliflower, production 65
Celery 39
Carload shipments by States 65
Production 65
Central terminals 25
Citrus fruits—
Intercoastal movement 22
Production 68
Commercial production 20–22
Concentration of production in limited areas 23
Cooperation of shippers and carriers 28
Cucumbers, production 65, 66
Decline in tonnage 18
Development of efficient protection against cold 28
Distribution 22
Distribution and proceeds sale of 9,476 carloads 22
Diversion in transit 52
Cranberries, division of receipts from sale of a barrel of 78
Elimination of delays in transportation 28
Exports of apples through Panama Canal 22
Florida citrus fruits 37, 38

Digitized by Google

Fruits and vegetables—Continued. Page.
Fresh prunes ... 48, 49
Full utilization of carrying capacity of cars ... 28
Grapes—
California ... 40, 41
New York and Michigan ... 40
Grown west of Mississippi ... 22
Handling costs ... 31, 32
Heater service ... 52
Iceberg lettuce ... 41, 42
Imperial Valley, Calif ... 22
Importance of transportation and protection ... 23
Improved methods of handling ... 28
Insulation of refrigerator cars ... 27
Intercoastal movement of citrus fruits ... 22
Investigation by Department of Agriculture ... 28
Investigation by Interstate Commerce Commission ... 28
Investigation of icing service ... 26
Lemons and oranges, exports ... 69
Length of haul ... 22
Lettuce—
Carload shipments by States ... 66
Production ... 66
Maine potatoes ... 46, 47
Markets at New York, Chicago, Pittsburgh, Philadelphia, and Boston ... 29, 30
Miscellaneous fruits ... 43
Mixed vegetables ... 42, 43
Movement through Panama Canal ... 22
Northern—
Cabbage ... 34, 35
Onions ... 44
Potatoes ... 47
Onions—
Carload shipments by States ... 67
Northern ... 44
Production ... 67
Texas ... 44–46
Yearly unloads at 10 markets ... 68
Oranges—
Carload shipments by States ... 68
Cost of production in California ... 52
Division of consumer's dollar ... 53
Exports ... 69
Increase in transportation charges ... 53, 54
Production ... 68
Relationship of freight costs to prices ... 53–55
Originated and handled by rail ... 18
Peaches—
Carload shipments by States ... 71
Distribution of Georgia crop ... 72
Production ... 69, 70
Yearly unloads at 10 markets ... 71
Peak movements ... 23
Pears—
Carload shipments by States ... 73
Production ... 72, 73
Perishability ... 23
Potatoes—
Carload shipment by States ... 74
Northern ... 47
Southern ... 48
Yearly unloads at 10 markets ... 74, 75
Preventable waste ... 28
Prompt loading and unloading ... 28
Receiving distributors' gross profit ... 31, 32
Reconsignment ... 23
Reduction of peak movement ... 28

Digitized by Google

Fruits and vegetables—Continued. Page.
Refrigeration and heater service optional ... 52
Refrigerator cars ... 26–28
Regional distribution of commercial—
Apple acreage ... 19
Peach acreage ... 20
Pear acreage ... 21
Relative number of cars loaded by districts ... 24
Retirement of old refrigerator cars ... 28
Southern—
Cabbage ... 35
Potatoes ... 48
Strawberries ... 50
Special transportation services ... 52
Specialization and centralization ... 19, 20
Spinach, Texas ... 49
Storage facilities ... 28
Strawberries—
Production ... 76
Southern ... 50
Yearly unloads at 10 markets ... 76
Summary of 9,476 carloads of ... 31
Supervision of perishable transportation ... 25
Sweet potatoes ... 50. 51
Carload shipments by States ... 75
Production ... 75
Texas—
Cabbage ... 36
Onions ... 44–46
Spinach ... 49
Tomatoes ... 51, 52
Carload shipments by States ... 77
Tonnage originated ... 17
Train schedules ... 25
Transportation charges, oranges ... 53, 54
Transportation costs ... 31, 32
Trend of movement ... 22
Watermelons—
Carload shipments by States ... 78
Production ... 97
Western boxed apples ... 21
Fuel oil:
Consumption ... 197
Production ... 197
Gasoline and kerosene:
Freight rates ... 199
Prices ... 199
Gasoline:
Consumption ... 195, 196
Disposition and use ... 195
Production ... 195, 196
Germany, railway mileage and rates ... 431
Grain and grain products ... 80
Grain:
Barley, relationship of freight costs to prices ... 99
Buying margins ... 94, 95
Capacity and usage of elevators at ports ... 84
Carload capacity—
Elevator and tracks at primary markets ... 81
Of grain elevators ... 81
Car supply ... 80
Comparison of farm prices ... 94
Conclusions ... 100
Congestion may be avoided ... 83–85
Corn, relationship of freight costs to prices ... 99, 100
Disposition of surplus grain ... 89, 90
Durum wheat ... 90

Digitized by Google

Grain—Continued. Page.
Effect of distance from Atlantic seaboard upon prices 93
Elevators, capacity of at primary markets 81
Elevators, capacity at ports 84
Exported via Gulf ports 88
Flexible method of rate making 80
For export 88
Freight rates 87, 88, 94
Handled on Mississippi and Warrior Rivers 384
Handled on Mississippi River 385
Increase—
In acreage 218
In production 217
Loading, necessity for tight cars 80
Lower rates on coarse grains 100
Margins 87, 97–99
Movement from country elevators 80
Oats, relationship of freight costs to prices 99, 100
Peak movement 80
Prices at Chicago 160
Prices obtained by country elevators 86
Price on the farm 86, 87
Rates via Great Lakes 387
Relationship of freight costs to prices 99, 482, 505
Situation elevators—
Baltimore 93
Boston 92
Buffalo 89
Chicago 82
Duluth 83
Galveston 98
Kansas City 84
Milwaukee 85
Minneapolis 81
New Orleans 97
New York 90
Newport News 96
Omaha and Council Bluffs 86
Peoria 87
Philadelphia 91
St. Louis 88
Subject to inspection 86
Track capacity at primary grain markets 81
Transportation facilities 80
Unfit box cars 254
Usage of elevators at primary markets 81
Wheat—
Low transportation rates via Great Lakes 92
Movement via Great Lakes 91
Relationship of prices to freight costs 99, 100
Great Lakes-St. Lawrence Ship Channel 391
Minority views 450, 451–469
Hay:
Comparison—
Of farm prices 107
Of market prices 107
Conclusions 107
Cost of incidental transportation services 105
Freight rates 106
Increase in marketing costs 106
Production 103, 104
Radius of distribution, average length of haul 105
Receipts and shipments 104
Receipts at markets 104
Relationship of freight costs to prices 106, 514–535
Relocation of producing sections 104
Ton-mile revenue 105

Digitized by Google

Hay—Continued. Page.
Value ... 105
Warehousing ... 105
Weight—
Of carloads ... 105
Per bale ... 104
Heater service, fruits and vegetables ... 52
History of railway transportation ... 433
Highway transportation:
Average—
Loaded haul of motor trucks ... 348
Passengers per automobile ... 351
Commodities distributed by motor truck ... 351
Comparison of rail and truck rates ... 362
Conclusions ... 364, 365
Consolidated rural schools ... 358
Coordination of railways, waterways, and highways ... 364
Cost of—
Hauling in farm wagons ... 348
Hauling in motor trucks ... 348
Data as to relative cost of motor and rail transportation limited ... 358, 359
Expenditures for road construction ... 355
Farm products hauled in motor trucks ... 351
Federal aid—
To highway improvement ... 364
Projects completed and payment made ... 637
Status ... 353, 354
Highway—
Expenditures ... 350, 351
Extension recommendation ... 364
Improvement stabilizes markets ... 364
Increase in motor vehicle traffic ... 351
Investment in—
Motorized highway rolling stock ... 355
Motor vehicles ... 349
Laws—Regulating motor trucks in various States ... 638
Length of haul, motor trucks ... 348, 361
Live stock transported in motor trucks ... 353
Lower rates by truck ... 361
Maintenance of present highways ... 364
Markets changed by motor truck ... 348
Milk deliveries by motor truck ... 351
Motor routes ... 358
Motor truck and rail freight rates ... 359
Motor trucks—
Affect traffic by steam lines ... 353
Average round trips per day ... 348
Extend the farmer's market ... 348
Hauling charges ... 361
Operating sphere ... 361
Transportation increased by railroad congestion ... 359
Trend of operation ... 363
Used by farmers' cooperative associations ... 355
Handle short-haul traffic ... 353, 354
In Indianapolis ... 354
Motor trucking companies operating in New England ... 359
Motor vehicles—
Bring farmers closer to city ... 348
Change of markets ... 348
Common carriers control ... 363
Important development ... 348
In interstate commerce ... 363
Registration and highway funds ... 349-352
Use in advance of highway construction ... 363
Packing and crating charges shipments by truck ... 360, 361
Passengers carried by automobile ... 351
Progress of Federal-aid road work ... 356

Digitized by Google

Highway transportation—Continued.
Motor vehicles—Continued. Page.
Rate comparison based on door-to-door delivery 361
Revenue from motor registrations 350
Rural road and bridge expenditures 357, 358
State laws regulating carriers by motor truck 640
Status of construction on Federal-aid post-road projects 356, 357
Taxes paid by motor vehicles 353
Traffic by motor truck 351
Traffic census, State of Connecticut 359
Ton-mileage motor truck 351
Wagons, average round trips per day 348
Hollow tile:
Average freight rates 203
Decrease in sales to farmers 203
Production 202
Relationship of freight costs to prices 203, 204
Shipments by rail 203
Human element—efficiency of railroads dependent upon 282
Human element, number of persons engaged in agriculture 282
Importance of transportation to the farmer 9
Income of express company 324–327
Income of Pullman Co 632
Income steam railroads 302–304
Increase in average haul 414
Increase in radius of distribution 414
Increase in freight rates 199
Inflation of prices 239
Inland waterways (*see* Transportation by water) 239
Inland waterways, expenditures have not produced traffic 419
Insulation of refrigerator cars, Department of Agriculture, United States Railroad Administration 27
Interstate Commerce Commission:
Agency should be created to correlate statistical information 399
Appropriation for maintenance 399
Average freight rates on live stock 115
Basic price relation and freight rates 404
Bureaus of 398
Bureau of—
Service 309
Statistics 311
Car relocation orders 266
Centralization of hearings 398
Classification of—
Employees 399
Tonnage, steamship lines 377
Coal car distribution, Hocking Valley, 12 I. C. C. 398; Traer, 13 I. C. C. 451. 262
Coastwise water rates 420
Conflicts with Shipping Board 412
Constitutional provisions 413
Control of securities 315, 409
Cooperation with State authorities 415
Decentralization 398
Decisions important 399
Duties and powers 394
Emergency powers over car service 401
Employment of experts 399
Exercise of power to establish equitable divisions 401
Ex Parte 74 ..... 312, 403
Farmers' elevator case decision 262
Five Per Cent case 311
Formal docket 398
Fourth section powers limited 405
Intervention in emergencies 266
Investigation and suspension docket No. 333 313
New duties imposed 400

Digitized by Google

Interstate Commerce Commission—Continued. Page.
Organization ... 397
Pooling of earnings ... 401
Power over—
State rates ... 414
Water carriers ... 412
Powers—
Conferred ... 400
Over rates ... 414
Under the fourth section ... 405
With respect to car service ... 401
With respect to terminal unification ... 402
Property investment, Thirty-fifth Annual Report ... 311
Rates on—
Coal ... 186
Mixed carloads of live stock ... 116
Reduction of—
Rates on butter ... 134
Rates on hay ... 107
Rates on live stock ... 115, 116, 118
Regional agencies ... 398, 415
Regulates—
Construction new lines ... 317
The issuance of stocks and bonds ... 317
Regulation of costs ... 409
Reports and statistics ... 311
Return computed on valuation ... 317
Rules with respect to income and capital accounts ... 311
Ruling regarding caretakers of live stock ... 110
Safety appliances for freight cars ... 241
Section 19, merchant marine act ... 418
Section 28, merchant marine act ... 413
Subdivisions of ... 397
Supervise loans to railways ... 317
Supreme Court decisions ... 413
Terminal committees ... 267
Unification of terminals when possible should be indicated ... 281
Valuation ... 414
Western Grain case, 1921 ... 106
Investment in Road and Equipment:
Electric railways ... 344
Steam lines ... 219, 220, 226
Iron and steel:
Average prices ... 175
Deflation ... 174
Freight costs ... 177
Raw materials ... 175, 176
Freight rates Birmingham district ... 177
On manufactured products ... 176, 177
Industry depression ... 174
Price fluctuations ... 172, 175
Production of finished product ... 171, 173, 174
Purchases by farmers ... 171
Wages of labor ... 175
Iron ore, shipments from mines ... 172
Italian railways:
Financial condition ... 429
Government owned ... 429
Increases in rates ... 429
Mileage ... 429
Revenues and expenses ... 429
Joint through rates, rail and water ... 384
Kerosene:
Consumption ... 197
Production ... 196, 197

Digitized by Google

Page.
Labor..... 130, 175, 185, 289, 291, 293, 302, 303, 308, 325, 328, 329, 344, 345, 409–411
Employees—
Number of Class I railroads..... 633
Hours or days worked, Class I railroads..... 634
Aggregate compensation, Class I railroads..... 635
Wage reduction of July 1, 1921..... 636
Laws, State, governing motor trucks..... 640
Length of haul..... 361, 219, 257, 282, 348
Fruits and vegetables..... 22
Hay..... 105
Live stock..... 115
Live stock:
Average farm prices..... 109
Average haul..... 115
Average proceeds, transportation costs, and other transit charges..... 544
Bruises in transit..... 114, 115
Caretakers..... 109
Cattle—
Changes in freight rates..... 131
Minimum weights and safe loading weights..... 113
Change of ownership in transit..... 110
Comparison freight costs on hogs and corn..... 171
Crippled and dead live stock..... 113
Daily receipts of—
Cattle at Chicago..... 126
Hogs at Chicago..... 128
Sheep at Chicago..... 130
Delay in unloading at stockyards..... 112
Federal law respecting food and rest..... 111
Freight rates..... 115
History of freight rates..... 115, 132
Hogs—
Minimum weight and safe loading weights..... 113
Price at Chicago..... 167
Horses, minimum weights and safe loading weights..... 114
Increased cost of marketing..... 109
Loss of markets due to late arrival..... 112
Live stock marketing costs..... 115
Minimum weights..... 112
Mixed carloads..... 116
Motor transport..... 117, 353
Overloading of cars..... 112
Principal markets..... 109
Production..... 108
Raising of..... 108
Receipts of—
Hogs, principal markets..... 127
Sheep at 7 principal markets..... 129
Relationship of freight costs to prices..... 117, 118, 536, 543
Seasonal influence of receipts of cattle..... 126
Sheep, minimum weights and safe loading weights..... 114
Shrinkage in transit..... 110, 112
Shrinkage of beef cattle in transit..... 112
Slaughtered—
On farm..... 109
Under Federal inspection..... 109
Speed of trains..... 110–111
Stockers and feeders..... 108
Movement..... 116
Train schedules..... 111
Transit privileges..... 110
Transported in motor trucks..... 117, 353
Transportation in railroad and privately owned cars..... 109, 263
Locomotives installed and retired..... 590
Locomotives in service of Class I railroads..... 580–583

Digitized by Google

Page.

Loss and damage:
- Average miles per car per day ... 209
- Claim payments ... 210–211
- Cooperation of shippers and carriers ... 211
- Eggs ... 149
- Filing of claims ... 207
- Fruits and vegetables ... 28
- Increase in extent and value ... 207–208
- Prevention, carriers' committees on ... 211
- Price index of all commodities ... 209
- Principal causes for ... 208–210
- Ratio to freight revenues ... 208
- Responsibility for ... 207
- To goods in transit, extent of freight claims paid by carriers ... 207

Lubricating oils ... 197

Lumber:
- Average freight costs and prices ... 189
- Carload shipments ... 190
- Consumption by farmers ... 189
- Extension of radius of distribution ... 218
- Falling off in consumption ... 190
- Freight rate adjustments ... 191
- Freight rates by water ... 190
- History of retail prices ... 570
- Increase in average haul ... 219
- Movement for typical producing points ... 189
- Movement through the Panama Canal ... 190
- Prices ... 189
- Production ... 188
- Reduction in supply ... 188
- Relationship of freight costs to prices ... 188, 189, 562
- Retail prices ... 190
- Short-haul rates ... 190
- Weight per 1,000 board feet ... 189

Manufactures, increase in volume and value ... 216

Manufactures and miscellaneous products, loading of ... 592–596, 628–631

Manufacturing industries:
- Growth ... 216
- Increase in capital investment ... 216
- Increase in wages ... 216

Marketing costs:
- Hay ... 106
- Live stock ... 115

Markets:
- Fruits and vegetables ... 29
- Live stock ... 109, 112
- Packing-house products ... 125

Meats:
- Distribution ... 125
- Packing establishments ... 124
- Production by locality ... 124, 125
- Wholesale prices ... 128

Meat packers:
- Branch houses for distribution of meat ... 125
- Commission men or wholesalers ... 125, 127
- Distribution of meats by peddler cars ... 125, 127
- Refrigerator cars ... 26, 125
- Sales to retailers ... 125, 127

Merchandise, less than carload, loading of ... 630

Method of rate construction ... 12

Mileage—classification of railroad ... 228–229

Mileage—car ... 602, 614–627

Mileage of railroads by States ... 576

Milk:
- City distribution ... 133
- Deliveries by motor truck ... 351
- Effect of freight rates on prices ... 132

Digitized by Google

Milk—Continued. Page.
Price paid to farmers by milk condensers ... 139–140
Prices ... 132
Sources of production ... 131
Relative freight charges on products of fresh milk ... 143
Value of milk sold to condensers ... 140
Mines, loading of products ... 592–596, 628–631
Minimum weights, live stock ... 112–114
Minority views, Great Lakes–St. Lawrence Ship Channel ... 450, 451–469
Motor transportation of live stock ... 117, 353
Motor transportation cost of transporting live stock ... 117
Mohair (*see* Wool) ... 119
Norway and Sweden railways ... 431
Operating expenses:
Electric lines ... 340
English railways ... 427
Express companies ... 330
Steam railroads ... 258, 289, 288
Operating income:
Electric lines ... 340
English railways ... 427
Express companies ... 324
Steam railroads ... 313, 314
Operating revenues:
Electric lines ... 340
English railways ... 427
Express companies ... 324
Steam railroads ... 258, 288, 303, 304
Operating statistics:
Electric railways ... 340, 341
French railways ... 428
Operation:
Interurban lines ... 345
Street railways ... 339, 344
Pacific Fruit Express Co ... 237
Packing-house labor ... 130
Packing-house products:
History of freight rates ... 132
Marketing ... 125
Refrigerator cars owned by meat packers ... 26, 125
Panama Canal:
Apple movement—through ... 22
Cargo tonnage—through ... 373
Citrus fruit movement through ... 22, 422
Classification of cargo passing through ... 375
Commercial traffic through ... 373–376
Cost of ... 373
Diversion of tonnage from rail lines ... 423
Exports of fruit via ... 22, 422, 423
Fourth-section complications ... 406
Loss of traffic by transcontinental rail lines ... 422
Lumber moving via ... 422
Movement of condensed milk through ... 143
Movement of fruits and vegetables through ... 22
Movement of lumber through ... 190
Nationality of vessels using ... 373–375
Pacific coast products exported via ... 22, 275, 422
Revenue from tolls ... 373, 422
Ship measurements ... 373
Tolls ... 373, 422
Tolls should be based on cost of operation ... 423
Volume of traffic through ... 422
Panama Canal act, requires rail carriers to relinquish control of vessels ... 390
Paper:
Freight rates ... 194
Imports from Canada ... 192

Digitized by Google

Paper—Continued. Page
Imports from Europe ... 195
Price fluctuations ... 194
Production ... 192
Trend of freight rates ... 193
Parcel post ... 332
Collect shipments ... 335
Department-store deliveries ... 336
Establishment of system ... 332
Financial results of operation ... 337
Garden truck carried ... 336
Growth ... 335
Insurance of shipments ... 337
Minimum charge ... 335
Modification of rates and weight restrictions ... 333
Number, weight, and postage parcels carried ... 335
Postmaster General's report ... 335
Rates ... 332–334
Rate inconsistencies ... 336
Readjustment of rates ... 337
Transportation costs ... 337
Volume of ... 335
Weight of parcels carried ... 335
Zone divisions ... 332
Passenger train cars:
In service Class I railroads ... 580–583
Installed and retired ... 590
Owned and operated ... 584
Peak movement:
Fruits and vegetables ... 23
Grain ... 80
Perishability of fruits and vegetables ... 23
Petroleum products ... 195–196
Imports and exports ... 198
Relation of freight rates to prices ... 199
Stocks on hand ... 197
Tank cars ... 197, 238
Petroleum refineries, location ... 196
Petroleum refining ... 196
Pig-iron production ... 173, 174
Population and area of the United States ... 227, 574
Port facilities ... 242–245
Poultry:
Amount of dressed poultry shipped to Chicago ... 145
Average prices ... 146
Freight rates, relationship to prices ... 146
Production ... 144
Radius of distribution ... 144
Receipts of dressed poultry at principal markets ... 146
Shipment by parcel post ... 146
Transportation and care of live poultry ... 144
Value at New York ... 145
Prices ... 79, 86, 87, 93, 102, 103, 107, 119, 123, 129, 132, 134, 139, 140, 146, 148, 149, 151, 154, 156, 160, 167, 174, 175, 189, 191, 194, 199, 202, 209, 308, 387, 403, 404
Declines and increased freight charges ... 10, 11
Of commodities, influence of car supply ... 258
Of corn, Chicago ... 160, 167
Of grain ... 86
Of hogs, Chicago ... 167
Of industrial stocks ... 319
Of live stock ... 117
Of paper ... 194
Of poultry ... 146
Of railroad stocks ... 319
Of wheat, Chicago ... 160

Digitized by Google

Page.
Primary markets, grain 81
Private line car repair and maintenance 254
Private refrigerator car lines 28
Privately owned freight cars 237
Privately owned refrigerator cars 26
Privately owned stock cars 109
Production of perishables, increase in 236
Products of:
Agriculture—Loading of 592–596, 628–631
Aminals—Loading of 592–596, 628–631
Animals, value 118, 119
Farm moved over highways 348
Forests—Loading of 592–596, 628–631
Mines—Loading of 592–596, 628–631
Manufacturers and miscellaneous, loading of 592–596, 628–631
Proper basis of transportation charges 9
Property investment:
Electric railways 344
Express companies 321, 322, 324
Steam railroads 219, 220, 226, 311, 314
Proportion of freight to value of goods transported 11, 12
Prosperity of the farms dependent upon transportation charges 9
Pullman Company:
Income account 632
Cars in service 591
Purchasing power of farm products in terms of transportation 11
Rail purchased by railroads 250, 289
Railroad facilities used by express company 324
Railroad supervision of the transportation of perishables 25
Railroad yards at terminal stockyards 112
Railway express companies 321
Railway express:
Book value of express property 321, 322, 324
Consolidation benefit 325, 330
Equipment and facilities 324
Expenses paid by Government 330
Income account and dividend payments 324
Operating expenses 330
Second-class rates 473
Supervision costs 328
Traffic handled 321
Railways:
England 425, 426, 427
France 428
Germany 431
Norway and Sweden—
Increase in rates 431
Mileage 431
Russia 430
Switzerland 429, 430
Reconsignment, fruits and vegetables necessary for 23
Recapture provision 316
Refrigeration of perishables, investigation and reorganization of icing stations and icing service 26
Refrigerator cars:
Adequate supply must be had 238
Central control for handling 28
Extension of activities of private refrigerator car lines 28
For fruits and vegetables 26–28
For packing-house products 26
Necessity for, in the transportation of meat 125
Need for additions to present supply 28
Number available 26, 27
Packers' 125
Serviceability, age 27
Standard, specifications 27, 28
Supply must meet peak demand 238
Regional clearing houses 401

Digitized by Google

Page.
Relation of the eastern part of United States to entire Nation 9–10
Relationship of prices to freight rates 10, 17, 79, 99, 100, 102, 106, 117–120, 134, 135, 139–142, 146, 154, 156, 157, 171, 177, 178, 184, 185, 187–189, 199, 202–207, 404, 482, 543, 550–570
Revenue freight, originated 592–596
Revenues, steam railroads 216, 258, 288
Russian railways:
  Present condition 430
  Mileage 430
Shingles:
  Competition of patent roofing 191
  Deflation of prices to consumer 192
  Influence of long haul upon prices 191
  Markets 191
  Prices 191
  Production 191
  Reduction in freight rates 192
  Relationship of freight costs to prices 573
Shoes:
  Freight rates 205
  Number and shipping weight per case 205
  Relationship of freight rates to prices 205
Shrinkage in transit, live stock 110–112
Southeastern Express Co., organized 321
Special transportation services, fruits and vegetables 52
Speed of trains, live stock 110
State laws, regulating carriers by motor truck 440
State legislation (see Federal and State Regulation).
Steam railroads:
  Accumulation of freight 246, 281–283
  Adequacy of freight-car equipment 239
  Adequate and efficient transportation system necessary 310
  American Railway Association 264, 266, 308, 309
  Amount of return 313
  Average haul per revenue ton 259
  Average miles per car per day 209
  Back haul of empty cars 277
  Bad-order cars—
    Cars generally fit for emergency use 265
    Increases in 265
    Large number will produce difficult situation 265
    Supply of cars influenced by number of 265
    Total number and percentage to total cars on line 265
  Book value 219, 220, 226
  Car loading 22, 28, 272, 274, 277, 592–596, 628–631
  Car mileage 276
  Car-miles, loaded and empty, by direction 615–627
  Car repairers 289
  Car service—
    Balanced movement and full utilization of power 268
    Car distribution to coal mines subject of controversy 262
    Car hire on mileage basis 259, 260
    Car-hire payments on per diem basis 260
    Car inspectors maintained at interchange points 264
    Car service division 266, 268, 309
    Car shortage and car surplus contemporaneous 258
    Car shortage each year 268
    Car shortage affects business 258
    Car shortage must not hamper commerce 261
    Car surplusages and shortages 596
    Car supply must be on same basis on each railroad 267
    Car supply should be equal in all sections 261
    Car supply should be increased 262
    Car utilization increases over 1914 258
    Cars for coal 262
    Cars for grain 261

Digitized by Google

Steam railroads—Continued.
Car service—Continued. Page.
Cars for live stock ... 263
Cars for perishables ... 264
Cars held and used by some lines ... 260
Cars prorated during car shortage ... 261
Cars sent home when traffic light ... 260
Cars should not be taken from strong lines for benefit of weak ... 268
Cars supplied for grain in relative proportion grain offered for shipment. 262
Central control of cars ... 268
Close association to shippers ... 258
Coal-car distribution ... 262
Mine ratings ... 263
Shortage of cars ... 263
Subject of complaint ... 262
Coal cars should be supplied ... 263
Commodities, loaded carloads ... 256, 592–596, 628–631
Comprehensive system of control necessary ... 267
Congestion of 1920 ... 266
Conclusions ... 266
Control ... 267, 309
Country divided into districts ... 268
Current information as to movement of traffic necessary ... 268
Current relocation of cars necessary ... 268
Discrimination opposed by public opinion ... 261
Distribution—
Increase in average haul ... 257
Increase in tonnage originated ... 255
Of cars for grain based on finding by Interstate Commerce Commission ... 261
Of cars in charge of superintendent of transportation ... 261
Of cars involves responsibility ... 261
Of cars should be on proper basis ... 261
Of private-owned stock cars ... 263
Duty of railroads to furnish cars according to the freight offered for shipment ... 262
Efficient use of cars necessary ... 261, 262
Efficient use of cars will reduce car shortage ... 261
Emergency conditions will result unless action taken ... 267
Emergencies should not arise ... 267
Empty-car mileage—
Heavy during periods of light traffic ... 259
Normal ... 258, 259
Empty-car miles by relocation to—
Loading points ... 259
Owners' rails ... 259
Empty-car movement ... 258
Causes waste ... 268
Influence of unbalanced traffic ... 259
Empty cars—
Interchanged by rules of American Railway Association ... 264
Moved in both directions ... 259
Relocated by rules ... 259
Relocated to loading points ... 259
Empty movement of special types of cars ... 259
Enactment of paragraph 12, section 1, of transportation act regarding cars for coal ... 262
Equitable distribution between individuals, districts, and territories necessary ... 261
Freight tonnage originated ... 255, 592–596
Important problem of carriers ... 258
Improvement in car distribution ... 258
Influence upon carriers' revenues and expenses ... 258
Influence upon price of commodities ... 258
Influence upon volume of tonnage ... 258
Interchange of cars ... 264

Digitized by Google

Steam railroads—Continued.
Car service—Continued. Page.
Live stock handled in private-owned cars 263
Live stock handled in railroad-owned cars 263
Passing reports of traffic moving 268
Per diem basis to induce return to owners 260
Per diem car-hire payments adopted 260
Per diem rate on basis of cost 260
Per diem rates of car hire 260
Plan suggested to provide necessary information 268
Pooling of cars advisable 268
Present system of rules predicated upon individual ownership 261
Progress in car control and unification of terminals 267
Railroads hold and use cars of other lines 268
Refrigerator cars 26–28, 125, 238
Extension of private car lines beneficial 264
Handling by private lines successful 264
Should be supplied to meet peak demand 264
Unless additional cars provided emergency will be created 264
Relocation of cars not ordered until shortage develops 268
Relocation orders of car service division 266
Revenue ton-miles per ton of carrying capacity 257
Rules for coal-car distribution, United States Railroad Administration 262
Rules of American Railway Association 262, 266
Rules may be suspended 401
Safeguards as to car distribution necessary 262
Section 15a of transportation act 268
Shipments of perishable freight given preference in car supply 261
Shipper offering largest amount of freight entitled to largest share of cars 262
Shippers must be fully supplied with cars 269
Shortage of stock cars develops before cars are relocated 264
Stock cars—
Additional, required 264
Not pooled 263
Relocated by car service division 263
Relocated to meet emergencies 263
Used for other purposes 263
Trend of traffic 259
Uniform system for handling cars necessary 261
Uninterrupted transportation necessary 267
Car Service Division 266–268, 309
Car shortage 401
Car supply must meet demands 306
Central control of cars necessary 309
Central control of car supply 402
Circuitous haul of empty cars 276
Clearing house for railroads 401
Coal and ore piers on Great Lakes 245–248
Commercial car shops 254
Commodity loading 255, 256, 275, 278, 279, 592–596, 628–631
Comparison of investment in road and equipment with railway capital outstanding 319
Compensation of employees 289, 293, 302, 635–636
Competition between railroads 289
Coordination of railroads' activities 309
Cost of capital 310
Cost of valuation of railroads 311
Current equalization of car supply 402
Deficits must not be made up by public funds 306
Development of the West 218
Divisional branches to control car supply 402
Division of joint rates 400
Effect of railway extension on population and development 215, 216
Effect of motor-truck competition 353
Efficiency of operation 305
Efficiency of railroad management 306

Digitized by Google

Steam railroads—Continued. Page.
Efficient operation at minimum cost 416
Emergencies 401
Employees:
Of railroads 282, 289, 633
Empty-car miles 273, 614–627
Expense of operation 288, 289
Exports via rail lines to New Orleans 285
Express revenue 287
Facilities—
At ports 242
At ports on Great Lakes 245, 248
At ports, utilization of 245, 246
At tidewater, improved methods for handling coal 248
At tidewater ports 244–246
Coal and ore, correlation of facilities on Great Lakes 248
For handling coal at tidewater 247, 248
Inadequacy of tidewater coal facilities 248
Must be in excess of normal requirements 306
Must be increased to meet business activity 306
Use of tracks 231–233
Financing largely through sale of bonds 315
Financing through stock issues difficult 315
Food Administration minimum weights 279
Freight and passenger traffic 231
Freight-car equipment inadequate 305
Freight-car ownership 235, 237, 324, 584, 585
Freight cars—
Cars for automobiles 240
Cars owned by meat packers 237
Cars returned empty to originating territory 239
Box cars—
Increase in carrying capacity 235, 586
Ownership 235, 584
Coal cars—
Automatic dumping devices 236
Increase in number and capacity 236, 586
Ownership 236, 584
Used for building materials 236
Used for steel 236
Difficulties in making repairs 240
Evolution of standardization 241
Flat cars—
Decrease in number 234, 236, 584
Increase in carrying capacity 234, 236, 586
Ownership 236, 584
Highly specialized types undesirable 240
Home cars on home roads 605
Increase in carrying capacity 234, 235, 586
Increase in size 240
Installed and retired 589
Interchangeability of parts 241
Materials and parts 241
Miscellaneous freight cars, increase in number and capacity 237, 584, 586
Necessity for interchange of freight cars 240
Need for further standardization 241
No demand by shippers for standardization 240
Private-line cars 237
Railroad cars for meat 237
Refrigerator cars, increase in number and capacity 234–237, 584, 586
Ownership 237, 584
Repair and maintenance 253
Safety appliances 241
Standard box cars 241
Standardization of freight-car equipment 240

Digitized by Google

Steam railroads—Continued.
Freight cars—Continued. Page.
Stock cars ... 234–236
Convertible double decks ... 236
Increase in number and carrying capacity ... 234–236, 584, 586
Use of single-deck and double-deck ... 236
Supply of box cars inadequate ... 239
Supply of coal cars inadequate ... 240
Supply of cars important principle involved ... 239
Supply of freight cars does not meet peak demand ... 239
Supply of refrigerator cars inadequate ... 240
Supply of stock cars inadequate ... 240
Supply should meet every demand ... 239
Tank cars—
Increase in number and carrying capacity ... 234–236, 585–590
Ownership ... 234–236, 585–590
Used for liquids ... 197, 236
Freight rates to be fixed to earn fair return ... 317
Freight traffic density ... 231–234
Freight train rules ... 307
Freight train operation, development of air brake ... 416
General officers ... 289
Government financing of railroads undesirable ... 317
Government guaranty undesirable ... 314
Gross ton-miles ... 271, 272, 614
Growth of ... 215
Have added to possibilities of industry and commerce ... 305, 306
Have extended the radii of distribution ... 306
Home movement of cars ... 275
Human element—
Efficiency of railroad operation depends upon efficiency of the individual ... 282
Number of employees per $10,000 invested ... 282
Railroad officers and employees should meet responsibilities ... 282
Responsibility is delegated to employees ... 282
Improvement necessary in methods in railroad shops ... 307
Income account ... 302
Net operating revenue increases and decreases ... 303, 304
Net revenue favorable in 1916 ... 302
Operating revenues increased by high freight rates ... 302, 303
Operating revenues increased by volume of traffic at less cost ... 302
Taxes, State and Federal ... 304, 305
Increase—
In mileage ... 215, 227, 230
In property investment ... 226
In revenues ... 216
In service rendered ... 226
In tonnage handled ... 215
In traffic ... 231, 233, 234
Insufficiency of terminal tracks and facilities handicaps business ... 305
Interchange—
Of cars ... 264
Rules established by Master Car Builders Association ... 264
Through waybilling prevents delay to cars ... 264
Interest of individual managements not identical ... 308
Interest rates affected by railroad credit ... 318
Investment in road and equipment ... 219, 220, 226
Joint use of terminals ... 402
Joint through rates ... 384
Loaded cars accompanied by transfer slips on waybills ... 264
Locomotive mileage ... 269, 271, 280, 606, 611
Locomotive performance ... 271
Locomotives ... 234
Improvement of older locomotives ... 234
Increase in tractive capacity and number ... 233, 234
Installed and retired ... 590
Maintenance ... 251

Digitized by Google

Steam railroads—Continued.
Locomotives—Continued. Page.
Number owned and operated ... 271
Tractive capacity ... 233, 234
Tractive power ... 271
Loss of short-haul traffic to motor trucks ... 353
Mail revenue ... 287
Maintenance—
Effect of elements upon deterioration of track ... 249
Effect of mechanical wear upon tracks ... 249
Reducing mechanical wear of ties ... 249
Maintenance of equipment ... 251
Accurate cost accounts necessary to efficiency ... 252
Average cost per car owned ... 251
Average cost per locomotive owned ... 251
Car repairers ... 289
Description of plant required ... 253
Deterioration of cars ... 254
Increase in cost ... 252
Cars repaired in commercial shops ... 253, 254
Cars unfit for grain ... 254
Cost of car repairs, in commercial shops ... 254
Foremen, service and compensation ... 289–291, 633–636
Increase in cost ... 251
Inspection of cars and trains ... 253
Locomotives ... 251
Cost not directly allocated by railroads ... 252
Repaired in commercial shops ... 251–252
Passenger cars repaired promptly ... 253
Private-line cars repaired ... 254
Repair of—
Cars foreign to owning line ... 254
Cars foreign to owning line not properly checked ... 255
Cars in interchange, responsibility ... 254
Cars, necessity for protection of lading ... 254
Freight cars deferred ... 253
Owner's defects ... 254
Superstructure of cars ... 254
Rules of Master Car Builders' Association ... 254
Maintenance of tracks for safe operation ... 249
Maintenance of way—
Organization of forces ... 249
Rails and ties ... 289
Section men ... 289
Maintenance of way and structures ... 249
Cost per mile of track ... 250
Deferred maintenance ... 250
Expenses ... 249
Increasing efficiency of employees ... 250
Preservation of track ties ... 249
Rails purchased, average per mile of track ... 250
Ties purchased and average per mile of track ... 250
Market value of railroad securities ... 318
Master Car Builders Association ... 241
Measure for improvement of railroad facilities ... 306
Measure of efficiency ... 226
Mileage ... 227
By classes ... 228, 229
By States ... 227, 576
Basis of car hire ... 259
Car ... 602–605, 615–627
Empty cars ... 258, 615–627
Train ... 607–611
Mine ratings for car distribution ... 263
Minimum car loads ... 277, 278
Must handle bulk of traffic ... 306
Necessity for extension of railways ... 219

Digitized by Google

Steam railroads—Continued. Page.
Net ton-miles ... 272, 614
Net tons per loaded car ... 254
Net tons per train ... 270
Net revenue ... 303
New capital needed ... 329
New investment required ... 317
Nonoperating property ... 248, 249
Nonrevenue tons ... 231
Nonrevenue ton-miles ... 231
Operating efficiency necessary to meet the present needs for transportation. 305
Operating expenses—
Car repairers; number, hours worked, and compensation ... 289, 633–636
Clerks; number, hours worked, compensation ... 293, 296, 633–636
Compensation of employees ... 289, 635, 636
Compensation of labor; per cent of gross revenue ... 302
Competitive activity resumed ... 289
Decrease in wages, 1921 ... 302, 636
Division officers; number, days worked, and compensation. 293, 300, 633–636
Employees; service and compensation ... 289, 293, 301, 633–636
Foremen; maintenance of equipment, number, hours worked, and compensation ... 289, 291, 633–636
Freight-train employees; number, hours worked, compensation ... 293, 295, 633–636
General expenses ... 289
General officers; number, days worked, and compensation. 293, 299, 633–636
Increase in salaries of general officers ... 289, 633–636
Increases in total expenses ... 288, 289
Increases in wages ... 289, 633–636
Number of employees ... 289, 633
Number of employees and aggregate compensation, 1921 ... 302, 633–636
Passenger-train employees; number, hours worked, compensation ... 293, 294, 633–636
Rail purchased ... 289
Section men; number, hours worked, compensation ... 289, 633–636
Ties purchased ... 289
Traffic employees; number, days worked, compensation ... 293, 297, 633–636
Traffic employees, number decreased during war ... 287
Traffic expense ... 287
Transportation account ... 289
Transportation department employees; number, hours worked, compensation ... 293, 296, 633–636
Transportation expense increases ... 289
Operating income ... 313, 314
Operation—
Bad-order cars; per cent to total cars on line ... 252
Freight transportation ... 252
Operation of gasoline motors on railroads ... 354
Net tons per loaded car ... 252
Ratio empty to loaded car-miles ... 252
Shortage of cars ... 252
Surplus of cars ... 252
Tare ton-miles ... 252, 614
Organization of American Railway Association ... 309
Other operating property ... 242
Passenger-car development ... 235
Passenger-car adequacy ... 235
Passenger cars—
Average cost ... 235
Average weight ... 235
Installed and retired ... 590
Miles ... 612
Pullman Co. cars ... 234
In service ... 591
Steel construction ... 234
Passengers per train ... 270
Passenger service train revenues ... 632

Digitized by Google

Steam railroads—Continued. Page.
Passenger traffic ... 231
Density ... 231–233
Revenue from express ... 287
Revenue from mail ... 287
Revenue increases ... 287
Revenue passengers carried ... 287
Revenue passenger miles ... 287
Passenger train—
Cars ... 234
Miles ... 607, 613
Service ... 307
Per diem basis of car hire ... 259
Physical property and transportation service ... 219
Pooling of freight ... 401
Population and railroad mileage ... 214
Population per mile of railroad ... 227, 575
Private car lines transporting fruits and vegetables ... 237
Private line cars; method of compensation for use ... 238
Private line—
Coal cars ... 238
Refrigerator cars ... 238
Tank cars ... 197, 238
Proper relation between stocks and bonds ... 315
Property investment ... 219, 220, 226, 311, 313, 314
Provision for increase in traffic ... 234
Public-service departments ... 308
Pullman Co., income account ... 632
Purchase of new equipment ... 239
Rail and water joint rates ... 384
Railroad—
Construction regulated by Interstate Commerce Commission ... 317
Credit depends upon adequate returns ... 312
Income tax ... 316
Management and organization ... 306
Managements and employees should compose their disputes ... 308
Taxation ... 316
Transportation cheaper in this country ... 317
Railroads are large consumers ... 314
Railway—
Capital outstanding ... 315
Construction aided by Government ... 310
Earnings should be sufficient ... 310
Expansion necessary ... 317
Finance ... 310
Valuation act ... 311
Railways, result of private enterprise ... 310
Rate committees ... 308
Rates should produce fair return ... 312
Ratio empty to loaded car miles ... 259
Ratio tare ton miles to net ton miles ... 259
Ratio tare and nonrevenue ton miles to revenue ton miles ... 259
Refrigerator cars—
Relocation orders ... 266
(*See* Freight cars.)
Regulation of traffic through ports ... 246
Relation of railroad credit to industry ... 314
Relocation of cars ... 259
Repair of private line cars ... 254
Return on investment ... 314
Return to railroads should be sufficient ... 320
Responsibility of employees ... 282
Restrictive influences should not be placed upon commerce ... 305
Revenues steam railroads ... 302, 303, 304
Revenues and expenses ... 258, 288, 289
Average per train-mile ... 304
By general accounts ... 288
Revenue freight originated ... 255, 257, 282, 592–

Digitized by Google

Steam railroads—Continued. Page.
Revenue passenger-miles... 270
Revenue per ton... 284
Revenue per ton-mile... 284
Revenue ton-miles... 231, 257, 270, 272, 282
Revenue tons transported... 231
Revenue traffic—
Freight tonnage originated... 255, 257, 282, 592–596
Freight tonnage received from connections... 282
Increase in revenue ton miles... 282
Scope of data... 219
Section men... 289, 633
Service performed for each $100 of investment... 228
Shippers and carriers should cooperate... 306
Shipments of wheat by lake and rail... 380
Shippers aid to carriers in car loading... 279
Shippers importance of car supply... 258
Shippers repair cars... 254
Shippers responsibility for accumulations... 281
Short-haul traffic... 283
Shortage of cars and inflation of prices... 230
Shortage of cars severely handicaps business... 305
Special types of cars... 275
Statistics more exact... 311
Supervision of expenses and operation... 308
Tare tonnage—
Car capacity averages... 277
Car capacities per cent utilized... 277
Car loading... 105, 277
Car loading-average of typical commodities... 279
Car loading—
Campaigns for heavier... 277, 278
Less than carload freight loads light... 280
Shippers aid carriers... 279
Car mileage—
Great Lakes Region... 276
Typical railroads... 276, 614–627
Cars should not be back hauled... 277
Cars should not be hauled empty to owners' rails... 277
Cars should not be hauled empty over long or circuitous routes... 277
Circuitous haul of empty cars... 276
Commodity loading... 278
Decrease in empty car miles necessary... 277
Effect of commodity loading... 275
Empty car miles... 276
Empty movement of special types of cars... 275
High tariff minimums slow up merchandise turnover... 277
"Home" cars on "home" roads... 275
Home movement of cars... 274, 275
Importance of decreasing tare tonnage... 277
Increase in net load per car important... 277
Increase in tonnage products of agriculture... 275
Increase of empty car miles... 276
Influence of—
Net car load... 273, 274
Empty car miles... 274
Minimum weights, United States Food Administration... 279
Net load of car influenced by trade conditions... 277
Ratio tare and nonrevenue ton miles to revenue ton miles... 273, 274
Ratio tare ton miles to net ton miles... 273, 274
Tariff minimums... 277, 278
Tariff bureaus... 308
Tax free securities... 316, 320
Taxes increasing... 316
Taxes, State and Federal... 304, 305
Terminal facilities must be unified... 306
Terminal tracks and facilities should be increased... 305

Digitized by Google

Steam railroads—Continued.
Through waybilling of freight— Page.
Advocated by Railway Accounting Officers' Association 264
Freight divisions cost carriers large sums 264
Joint through rates desirable 264
Objection raised by some carriers 265
Reduces expense of carriers 265
Simple method of computing rate divisions advocated 264
Ties purchased by railroads 289
Ton miles 307, 612, 613
Ton miles, gross-tare-net 614
Tonnage handled 592–596, 628–631
Tonnage in transit—
Increase in average haul 282
Motor truck affecting short-haul traffic 283
Value of commodities in transit 284
Tonnage originated 17, 255, 275, 282, 592–596, 628–631
Percentages showing relative volume 593–596
Tonnage per car 257, 628
Tonnage received from connections 282
Tons per car 628
Track duplications excessive 308
Track facilities at ports 246
Trackage increase 233, 234
Trade influence upon car loading 277
Traffic averages 285, 286
Revenue per ton 284
Revenue receipts per ton mile 284
Traffic density 231–234
Traffic increases 317
Train miles 270, 602–605, 607–613
Decrease in transportation service train miles 271
Freight train miles 270, 271
Increase in net ton miles 272
Increase in train loading 270
Measure of efficiency 270
Passenger train miles 270, 272
Revenue ton miles per freight train mile 272
Train tonnage 272
Train revenue, passenger service 632
Train schedules 25, 111, 269
Train service—
Effect of increased tractive power of locomotives upon operation 269
Freight locomotive miles 269
Fuel consumption and cost 269
Light locomotive miles 269
Passenger locomotive miles, increases and decreases 269
Restoration of passenger-train schedules 296
Train tonnage 272
Increase in car loading 272, 274
Increase in net car load 274
Train and yard service 269
Transportation an incident to trade 239
Transportation act authorizes loans 317
Transportation department employees 293, 633
Transportation expenses 288, 289
Transportation facilities must be upon sound basis 306
Transportation should be coordinated 310
Transportation should be self-sustaining 319
Transportation taxes removed 316
Trend of traffic 239
Utilization of cars 258, 277
Unification of terminals 267, 281, 402
Unification of terminals during Federal control 281, 307
Unification of terminal facilities abandoned 281, 307
Unification and joint operation of terminals desirable 281, 308, 402
Economical 307, 308

Digitized by Google

Steam railroads—Continued. Page.
Units of traffic per $100 of investment 227
Valuation 214
Valuation of—
Railroads 311, 317
Railroads Ex parte 74 312
Value of—
Commodities in transit 283
Terminals 280
Wage decreases 302, 636
Wage increases 289
Wages of—
Labor 303
Outside industries 303
Wages paid by railroads 409
Yard service 269
Switching locomotive mileage 280
Switching service in England 280
Switching service of American railways unique 280
Terminals occupy valuable land 280
Terminal services important 280
Train switching locomotive mileage 280
Unification and joint operation of terminals should be made 281, 308, 402
Unification of terminals abandoned 281, 307
Unification of terminals during Federal control 281, 307
Unification of terminals economical 281, 307, 308
Unification of terminals opposed for competitive reasons 281
Steel:
Annual capacity of plants 171
Investment in industry 171
Production and consumption 171
Stock yards:
Congestion 112
Delay in unloading stock 112
Railroad facilities 112
Store-door delivery of express 324
Supreme Court, decision in Wisconsin case 414
Switzerland railways:
Increased rates 430
Mileage 429
Tank cars, petroleum products 197
Tare tonnage, full utilization of carrying capacity of cars 28, 257, 272, 274, 277
Terms, definition of some used in railroad statistics 470
Ton-miles 307, 612, 613
Tonnage, originated 17, 200, 255, 275, 282, 592–596, 628–631
Train schedules:
Fruits and vegetables 25
Live stock 111
Transit privileges, live stock 110
Transportation by steam railroad, historical sketch 212
Transportation by water:
All-water route via Montreal 388
American merchant marine 366
Coastwise and Great Lakes steamship lines 377
Coastwise and inland shipping 377
Commodities handled, Great Lakes and inland waterways 377–379
Conditions of rate making and service 420
Costs of operation 420
Cost of transportation on Great Lakes 387
Cotton handled, Mississippi-Warrior Rivers 384
Deficit in operation of Government-owned barge lines 385
Development of inland waterways should be on sound basis 386
Development of waterways part of general scheme 382
Distributing ports on Great Lakes 386
Export rates on wheat 388
Federal expenditures, inland waterways 380, 381
Freight rates via Great Lakes not controlled 389

Digitized by Google

Transportation by water—Continued. Page.
Freight revenue per ton handled by steamship lines 380
Government-owned and operated vessels—
Mississippi and Warrior Rivers 382–384
Government vessels-average net revenue per ton 384
Grain, flour, and cotton handled, Mississippi-Warrior Rivers 385
Grain and flour shipments through St. Marys Falls Canal 389
Grain and grain product shipments through Sault Ste. Marie Canal 389
Grain handled Mississippi-Warrior Rivers 384
Great Lakes 386
Receipts and shipments of bulk and package freight 650
St. Lawrence ship channel 391
St. Lawrence ship channel minority views 450, 451–469
Joint rates, rail and water 384
Merchant marine of world 366
Competition between American and foreign ships 421
Cost of operation of American vessels 421
Government aid necessary 422
Losses of Government operation 421
Necessary in time of war 372
Requirement of navigation laws 421
Ship tonnage under construction 421
Vessels controlled by Shipping Board 421
World's tonnage 421
Mississippi River barge line; inauguration of service 385
Movement of heavy commodities in bulk 391
Movement of package freight via Great Lakes 390
Ocean-going freight rates 372
Operating revenues and expenses of carriers—
Atlantic and Gulf coast 645
Coastwise and Great Lakes 644
Great Lakes 647
Pacific coast 646
Operating statistics; coastwise and Great Lakes steamship lines 648
Operation of American-owned merchant vessels 366
Policy of Congress 420
Property investment water carriers—
Atlantic and Gulf coast 645
Coastwise and Great Lakes 644
Great Lakes 647
Pacific coast 646
Railroad-owned lake carriers 390
Rates and charters, Great Lakes 387
Rates on grain, Mississippi River barge line 385
Rates on wheat, Great Lakes 387
Receipts and shipments of bulk and package freight on Great Lakes 650
Regulation of rates undesirable 420, 421
Regulation of water transportation 420
Shipments of wheat by lake and rail from Duluth and Superior 390
Shipping Board balance sheet 367
Companies operating Shipping Board vessels 371
Disposition of appropriation moneys 368
Distribution of—
Active fleet 371
Fleet by form of control 371
Vessels by trade allocation 369
Financial statement 366
Operation 366
Recapitulation of owned and controlled vessels 369
Status of all vessels controlled 370
Vessels owned and controlled 421
Steamship and barge lines, Mississippi and Warrior Rivers 382
Steamship lines engaged in coastwise traffic 377
Tonnage handled on Great Lakes 386
Tonnage transported on inland water routes 391
Transoceanic merchant marine 421
Transfer from large to small vessels, Great Lakes 388

Digitized by Google

Page.
Transportation by water—Continued.
Transportation of grain on Great Lakes 388
Vessels controlled and owned by Shipping Board 367
Vessels plying the Great Lakes 386
Waterway improvement effect upon railroad freight rates 381
Wheat shipments via Great Lakes 389
Transportation of—
Farm products dependent upon reasonable charges 9
Live poultry 144
Live stock 109
Petroleum products 198
Trend of movement, fruits and vegetables 22
Undeveloped land areas 219
Valuation of steam railroads 219
Volume of production increasing 317
Value of tonnage transported 11
Wealth of United States, increase 218
Weights of lumber 189
Wire nails:
Freight rates 178
Relationship of freight costs to prices 177, 178
Wool:
Average market price 123
Average price paid producers 123
Average transportation cost 123
Imports 119
Marketing by cooperative associations 124
Markets 119
Prices 119
Production 119
Relationship of freight costs to prices 119–122
Spread between producers' price and mill price 124
Unscientific marketing 124

O

Digitized by Google

67TH CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPORT
No. 408

Marketing and Distribution

REPORT OF THE JOINT COMMISSION OF AGRICULTURAL INQUIRY

IN FOUR PARTS

PART IV

SUBMITTED BY MR. ANDERSON

OCTOBER 15, 1921.—Ordered to be printed with illustrations

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

Digitized by Google

E cou 6 5 ° 21. 9

HARVARD COLLEGE LIBRARY
FROM THE
PRESIDENT'S OFFICE
Oct. 5, 1922

JOINT COMMISSION OF AGRICULTURAL INQUIRY.

UNITED STATES CONGRESS.

HOUSE MEMBERS.	SENATE MEMBERS.
SYDNEY ANDERSON, Minnesota, *Chairman.*	IRVINE L. LENROOT, Wisconsin.
OGDEN L. MILLS, New York.	ARTHUR CAPPER, Kansas.
FRANK H. FUNK, Illinois.	CHARLES L. McNARY, Oregon.
HATTON W. SUMNERS, Texas.	JOSEPH T. ROBINSON, Arkansas.
PETER G. TEN EYCK, New York.	PAT HARRISON, Mississippi

IRVING S. PAULL,
Distribution Analyst,
Secretary of the Commission.

II

Digitized by Google

CONTENTS.

	Page.
List of tables	IV
List of diagrams and charts	VII
Introduction	1
Summary	3
Conclusions	9
Chapter I.—Marketing	14
Chapter II.—Grain	17
Chapter III.—Fruits and vegetables	68
Chapter IV.—Wool	74
Chapter V.—Movement and markets	104
Chapter VI.—Conversion	115
Chapter VII.—Distribution (wholesaling)	156
Chapter VIII.—Distribution (retailing)	162
Chapter IX.—Total cost of distributing certain commodities	208
Chapter X.—Cooperative marketing	226
Chapter XI.—Marketing and related activities in the Bureau of Agricultural Economics of the United States Department of Agriculture	232
Index	263

Digitized by Google

LIST OF TABLES.

Page

A. Total persons 10 years of age and over engaged in gainful occupations in 1920. ... 17
A1. Average buying margins of different types of elevators on specified grades of grains during the crop years 1912–13 to 1916–17. ... 21
A2. No. 2 hard winter wheat at Minneapolis from 8 typical points in South Dakota and Montana. ... 23
A3. No. 2 northern spring wheat at Minneapolis from 20 typical points in North and South Dakota. ... 25
A4. No. 2 hard winter wheat at Chicago from 17 typical points in South Dakota and Iowa. ... 25
A5. No. 3 hard winter wheat at Chicago from 10 typical points in Iowa. ... 25
A6. No. 2 hard winter wheat at St. Louis from 12 typical points in Iowa and Illinois. ... 27
A7. No. 3 hard winter wheat at St. Louis from 9 typical points in Iowa. ... 27
A8. No. 2 hard winter wheat at Baltimore from 10 typical points in Ohio and Indiana. ... 29
A9. No. 2 hard winter wheat at New York from 11 typical points in Iowa, Illinois, and Ohio. ... 31
A10. No. 2 hard winter wheat at Omaha from 15 typical points in Colorado, Nebraska, and South Dakota. ... 33
A11. No. 2 hard winter wheat to Galveston from 6 typical points in Texas. ... 35
A12. No. 3 hard winter wheat at Galveston from 9 typical points in Oklahoma and Texas. ... 35
A13. No. 3 mixed corn at Minneapolis from 7 typical points in South Dakota. ... 37
A14. No. 3 yellow corn at Minneapolis from 6 typical points in Illinois and Iowa. ... 37
A15. No. 3 yellow corn at Chicago from 16 typical points in Iowa, Illinois, and South Dakota. ... 39
A16. No. 3 mixed corn at Chicago from 10 typical points in Iowa and South Dakota. ... 39
A17. No. 2 yellow corn at St. Louis from 12 typical points in Iowa and Illinois. ... 41
A18. No. 3 yellow corn at St. Louis from 13 typical points in Illinois and Iowa. ... 41
A19. No. 2 mixed corn at Kansas City, Mo., from 10 typical points in Kansas, Missouri, and Oklahoma. ... 43
A20. No. 3 yellow corn at Omaha from 10 typical points in Nebraska and South Dakota. ... 45
A21. No. 3 mixed corn at Omaha from 7 typical points in Nebraska and South Dakota. ... 45
A22. No. 2 yellow corn at Baltimore from 6 typical points in Illinois and Iowa. ... 47
A23. No. 4 barley at Minneapolis from 28 typical points in Minnesota and North and South Dakota. ... 49
A24. Medium barley at Minneapolis from 12 typical points in South Dakota. ... 49
A25. No. 2 barley at Minneapolis from 4 typical points in Minnesota and North Dakota. ... 49
A26. No. 3 barley at Minneapolis from 5 typical points in Minnesota and South Dakota. ... 49
A27. No. 4 barley at Milwaukee from 9 typical points in Minnesota and South Dakota. ... 51
A28. Medium barley at Milwaukee from 12 typical points in South Dakota. ... 51
A29. Medium barley at Chicago from 12 typical points in South Dakota. ... 53
A30. No. 4 barley at Chicago from 9 typical points in Minnesota and South Dakota. ... 53
A31. Brewing and feed barley at San Francisco from 5 typical points in California. ... 55
A32. No. 3 white oats at Minneapolis from 18 typical points in Minnesota and South Dakota. ... 57
A33. No. 3 white oats at Chicago from 20 typical points in Illinois, Iowa, and South Dakota. ... 59

Digitized by Google

Page.
A34. No. 2 white oats at Chicago from 5 typical points in Illinois 59
A35. No. 3 white oats at New York from 13 typical points in Washington, Illinois, and Indiana 61
A36. No. 3 white oats at St. Louis from 20 typical points in Illinois and Iowa .. 63
A37. No. 2 white oats at St. Louis from 12 typical points in Illinois and Iowa .. 63
A38. No. 3 white oats at Omaha from 20 typical points in Nebraska and South Dakota 65
A39. No. 2 white oats at New Orleans from 4 typical points in Illinois 67
A40. Summary of 9,476 cars of fruits and vegetables sold at wholesale in various cities 69
A41. Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to Fort Worth, Tex 77
A42. Average price per hundred pounds of beef cattle received by the producer after deducting freight, feed, yardage, and commission charges to National Stock Yards 79
A43. Average price per hundred pounds of cattle received by the producer after deducting freight, feed, yardage, and commission charges to Denver, Colo 81
A44. Average price per hundred pounds of cattle received by the producer after deducting freight, feed, yardage, and commission charges to Kansas City, Mo 83
A45. Average price per hundred pounds of cattle received by the producer after deducting freight, feed, yardage, and commission charges to Chicago, Ill 85
A46. Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to Sioux City, Iowa 87
A47. Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to South Omaha, Nebr 89
A48. Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to Chicago, Ill 91
A49. Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to South Omaha, Nebr 93
A50. Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to Denver, Colo 95
A51. Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to Sioux City, Iowa 97
A52. Eggs, average price (cents per dozen) received by the farmers on the first of each month for the United States, 1913–1921 98
A53. Production of potatoes in the United States, 1917–1921 99
A54. Potatoes (white), carload shipments by States of origin, 1917–1921 100
A55. Cold-storage holdings of case eggs as reported to the Bureau of Markets and Crop Estimates 113
A56. Cold-storage holdings of apples as reported to the Bureau of Markets and Crop Estimates, boxed, barreled 113
B1. Eight groups of trade-marked food commodities 117
B2. Rolled oats 118
B3. Corn flakes 119
B4. Canned milk 120
B5. Bread 121
B6. Peanut butter 122
B7. Macaroni 123
B8. Salt 124
B9. Laundry soap 125
B10. Soap powder 126
B11. A detailed analysis of the distribution that the manufacturer of eight groups of trade-marked food commodities makes of the dollar he receives from the wholesaler for his product and the fluctuation in selling price. 129
B12. Distribution of the canned milk manufacturer's dollar 131
B13. Distribution of the bread manufacturer's dollar 133

Digitized by Google

	Page.
B14. Distribution of the rolled oats manufacturer's dollar	135
B15. Distribution of the corn flakes manufacturer's dollar	137
B16. Distribution of the peanut butter manufacturer's dollar	139
B17. Distribution of the macaroni manufacturer's dollar	141
B18. Distribution of the salt manufacturer's dollar	143
B19. Distribution of the wheat cereal manufacturer's dollar	145
B20. Distribution of the laundry soap manufacturer's dollar	147
B21. Manufactured food product	149
B22. Dressed beef	151
B23. Distribution of the retailer's dollar for clothing	153
B24. Shoe manufacturer's distribution of retailer's dollar	155
C1. Wholesale grocer	159
C2. Wholesale groceries	161
D1. Distribution of the consumer's dollar	169
D2. The consumer's dollar spent for men's and boys' clothing	170
D3. The consumer's dollar spent for hardware	171
D4. The consumer's dollar spent for shoes	172
D5. The consumer's dollar spent for groceries	173
D6. The consumer's dollar spent for dry goods	174
D7. Operating expenses and profit in the retail meat trade	176
D8. Cost of operating retail stores, by percentage of each dollar of sales	178
D9. Men's clothing, retail	179
D10. Men's furnishings, retail	181
D11. Hardware, retail	183
D12. Dry goods, retail	185
D13. Groceries, retail	187
D14. Distribution of dollar consumer pays for bread	210
D15. Distribution of dollar consumer pays for corn flakes	212
D16. Distribution of dollar consumer pays for rolled oats	214
D17. Distribution of consumer's dollar for live stock	218
D18. Distribution of consumer's dollar for men's clothing	221
D19. Distribution of consumer's dollar for men's shoes	223
D20. Table for distribution and grower's returns of California oranges	225

Digitized by Google

LIST OF DIAGRAMS AND CHARTS.

DIAGRAMS.

		Page.
I.	Distribution of agricultural products	14
II.	Distribution of wheat and wheat products	17
III.	Distribution of fruits and vegetables	68
IV.	Distribution of wool and wool products	74
V.	Distribution of cotton and cotton products	74
VI.	Distribution of dairy products	74
VII.	Distribution of live stock and live stock products	74

CHARTS.

A.	Elevator buying margins: Wheat No. 1 and No. 3	20
A1.	Wheat to Minneapolis	22
A2.	Wheat to Chicago	24
A3.	Wheat to St. Louis	26
A4.	Wheat to Baltimore	28
A5.	Wheat to New York	30
A6.	Wheat to Omaha	32
A7.	Wheat to Galveston	34
A8.	Corn to Minneapolis	36
A9.	Corn to Chicago	38
A10.	Corn to St. Louis	40
A11.	Corn to Kansas City	42
A12.	Corn to Omaha	44
A13.	Corn to Baltimore	46
A14.	Barley to Minneapolis	48
A15.	Barley to Milwaukee	50
A16.	Barley to Chicago	52
A17.	Barley to San Francisco	54
A18.	Oats to Minneapolis	56
A19.	Oats to Chicago	58
A20.	Oats to New York	60
A21.	Oats to St. Louis	62
A22.	Oats to Omaha	64
A23.	Oats to New Orleans	66
A24.	Fresh fruits and vegetables	68
A25.	Live stock to Fort Worth	76
A26.	Live stock, National Stock Yards, Illinois	78
A27.	Live stock, Denver from Colorado, cattle	80
A28.	Live stock, Kansas City, cattle	82
A29.	Live stock, Chicago, cattle	84
A30.	Live stock, Sioux City, beef steers	86
A31.	Live stock, South Omaha from Colorado and Nebraska, beef steers	88
A32.	Live stock, Chicago, hogs	90
A33.	Live stock, South Omaha from Nebraska, hogs	92
A34.	Live stock, Denver, hogs	94
A35.	Live stock, Sioux City, hogs	96
A36.	Cold storage holdings of potatoes	102
A37.	Cold storage holdings of case eggs	111
A38.	Cold storage holdings of apples in barrels and boxes	112
B1.	Manufacturer's distribution of the dollar received from the wholesaler, food commodities	117
B2.	Manufacturer's distribution of the dollar received from the wholesaler, rolled oats	118

Digitized by Google

Page.

B3. Manufacturer's distribution of the dollar received from the wholesaler, corn flakes 119
B4. Manufacturer's distribution of the dollar received from the wholesaler, canned milk 120
B5. Manufacturer's distribution of the dollar received from the wholesaler, bread 121
B6. Manufacturer's distribution of the dollar received from the wholesaler, peanut butter 122
B7. Manufacturer's distribution of the dollar received from the wholesaler, macaroni 123
B8. Manufacturer's distribution of the dollar received from the wholesaler, salt. 124
B9. Manufacturer's distribution of the dollar received from the wholesaler, laundry soap 125
B10. Manufacturer's distribution of the dollar received from the wholesaler, soap powder 126
B11. Manufacturer's distribution of the dollar received from the wholesaler, wholesaler's cost of merchandise 128
B12. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, canned milk 130
B13. Manufacturer's distribution of the dollar the retailer pays for merchandise, bread 132
B14. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, rolled oats 134
B15. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, corn flakes 136
B16. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, peanut butter 138
B17. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, macaroni 140
B18. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, salt 142
B19. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, wheat cereal 144
B20. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, laundry soap 146
B21. Manufacturer's distribution of the dollar the wholesaler pays for merchandise, manufactured package food 148
B22. Packer's distribution of the dollar the retailer pays for merchandise, beef dressed 150
B23. Manufacturer's distribution of the dollar the retailer pays for merchandise, men's suits 152
B24. Manufacturer's distribution of the dollar the retailer pays for merchandise, shoes 154
C1. Wholesale grocers' stock turn 157
C2. Groceries, wholesaler's distribution of the dollar the retailer pays for merchandise 158
C3. Groceries, wholesale, total of averages 160
D1. Retail grocers' stock turn 163
D2. Retail dry goods stock turn 164
D3. Retail shoes stock turn 165
D4. Retail hardware stock turn 166
D5. Retailer's distribution of the dollar received from consumer 169
D6. Men's clothing, retailer's distribution of the dollar received from consumer 170
D7. Hardware, retailer's distribution of the dollar received from consumer 171
D8. Shoes, retailer's distribution of the dollar received from consumer 172
D9. Groceries, retailer's distribution of the dollar received from consumer 173
D10. Dry goods, retailer's distribution of the dollar received from consumer 174
D11. Meat, retailer's distribution of the dollar received from consumer 175
D12. Men's clothing, retail, total of averages 178
D13. Men's furnishings, retail, total of averages 180
D14. Hardware, retail, total of averages 182
D15. Dry goods, retail, total of averages 184
D16. Groceries, retail, total of averages 186
D16a. Flour, spring wheat 188
D16b. Flour, winter wheat 189

Digitized by Google

Page.
D16c. Bread 190
D16d. Potatoes, Irish 191
D16e. Sugar 192
D16f. Cornmeal 193
D16g. Rice (Blue Rose) 194
D16h. Oranges 195
D16i. Raisins, seeded 196
D16j. Red Salmon 197
D16k. Hams 198
D16l. Butter (creamery) 199
D16m. Eggs, candled 200
D16n. Eggs, storage 201
D16o. Eggs, strictly fresh 202
D16p. Milk, fresh 203
D16q. Lard, compound 204
D16r. Oleomargarine 205
D17. Bread, detailed distribution of the consumer's dollar between the producer, miller, manufacturer, and retailer 209
D18. Corn flakes, detailed distribution of the consumer's dollar between the producer, miller, manufacturer, wholesaler, and retailer 211
D19. Rolled oats, detailed distribution of the consumer's dollar between the producer, miller, manufacturer, wholesaler, and retailer 213
D20. Beef, fresh, detailed distribution of the consumer's dollar between the shipper or producer, packer, and retailer 217
D21. Men's suits, detailed distribution of the consumer's dollar between the manufacturer and retailer 220
D22. Men's shoes, detailed distribution of the consumer's dollar between the manufacturer and retailer 222
D23. Oranges, distribution of the consumer's dollar, paid for oranges 224

Digitized by Google

Digitized by Google

MARKETING AND DISTRIBUTION.

INTRODUCTION.

Senate Concurrent Resolution No. 4, Sixty-seventh Congress, first session, created the Joint Commission of Agricultural Inquiry and required it to investigate and report to Congress upon the following subjects:

1. The causes of the present condition of agriculture.
2. The cause of the difference between the prices of agricultural products paid to the producer and the ultimate cost to the consumer.
3. The comparative condition of industries other than agriculture.
4. The relation of prices of commodities other than agricultural products to such products.
5. The banking and financial resources and credits of the country, especially as affecting agricultural credits.
6. The marketing and transportation facilities of the country.

The commission found it impossible to deal with the questions presented by the resolution on the basis of the subject division which the resolution suggested. As the investigation could not be divided in accordance with the subject divisions suggested or carried on as a single investigation under one general head, the commission divided its inquiry into four major subjects:

1. The agricultural crisis and its causes.
2. Credit.
3. Transportation.
4. Marketing and distribution.

In investigating the first three major subjects the commission was able to utilize, in a large measure, much fundamental data, more or less unorganized and unrelated which was compiled by various departments of the Government, the Interstate Commerce Commission, and many public and private agencies. There were practically no fundamental data of a governmental or public character with respect to marketing and distribution and it was therefore necessary for the commission to undertake a pioneering effort to secure from original sources the basic facts upon which a consideration of the problems of distribution might be predicated. This necessitated the setting up of points of contact with the various agencies engaged in the various functions of distribution and erecting an organization capable of securing from the various trades the fundamental data essential as a basis for the commission's consideration. It was necessary, in order to obtain these facts in their relation to established trade practices and methods of distribution, to secure the assistance of men acquainted with these practices and methods in each trade in order that the information obtained might reflect accurately the technical practices of each trade and its relation to every other trade, as well as the whole problem.

Digitized by Google

With a view to securing this technical assistance and to secure the cooperation of the trades affected, the commission set up in each trade or industry a committee whose function it was to assist the commission in securing and correlating the information desired from the trades. For instance, the commission set up a retail grocers' committee, a wholesale grocers' committee, a food manufacturers' committee, and similar committees of the trades dealing in dry goods, clothing, shoes, hardware, meat, etc. With the assistance of these committees, questionnaires were worked out designed to reflect, over a period of years beginning with 1913 and ending with 1921, the actual price ranges of representative commodities distributed by these trades. These, as far as possible, reflected the proportion of the consumer's dollar taken by each distributor, manufacturer, or producer. In this way it was possible to check the figures submitted in the questionnaires of a given trade with the figures submitted by other factors in the chain of distribution and to assure the substantial accuracy of the figures obtained through the questionnaires.

Fifteen thousand questionnaires were sent out and returned. These questionnaires covered a total of more than 200 commodities and their compilation necessitated the making of millions of calculations. When the final figures representing the results of the questionnaires sent to each trade were completed the commission called a conference in Washington of representatives of all the trade committees. This general committee considered the reports of the special trade committees and amplified and correlated them.

This report is written upon the basis of the reports of the various committees and conferences called for the purpose of developing the facts. It is not complete. There were several missing links which the commission has not been able to supply, either because it was impossible to secure the necessary cooperation with the trade in question or because the data necessary for the setting up of a complete picture of the distribution was not available from any source. For instance, in the retail meat trade it was found impossible to secure from the books of the retail meat dealers information with respect to price and price ranges or margins for years back of 1921; the trade and the trade committee cooperated to the fullest extent, but the books of the dealers did not contain this information. On the whole, however, the commission has had the most hearty cooperation of the various trades and trade organizations dealing in the manufacture and the wholesale or retail distribution of a wide range of commodities. Without this cooperation it would have been impossible to secure the information upon which this report rests. The commission acknowledges with appreciation the cooperation of a large number of trade associations and individuals that have contributed to the data which the report contains.

Digitized by Google

SUMMARY.

The economic distribution of the absolute essentials, food, clothing, shelter, and fuel is a fundamental problem which concerns every man, woman, and child in the United States. In earlier times there was no problem of distribution because people lived simply and produced their own foodstuffs, clothing materials, and found fuel and materials from which to create shelter close at hand. They enjoyed such comfort and convenience as they could provide for themselves and service was a matter of neighborly exchange.

Pioneers traveled into new country and established communities and developed resources. Railroads were developed, goods were transported, and time and distance became factors in the relations and transactions of men. Fertile soil yielded crops beyond the requirements of the tiller of the soil. Forests were converted into building materials for the erection of better homes and into furniture to fill the new homes. Mines were developed and their mineral products converted into machinery to relieve human labor. Farmers exchanged their surplus crops for lumber to build barns and homes and for implements to cultivate the soil and harvest the crops. Traders and merchants facilitated the exchange of commodity for commodity and surplus for comfort. Travel became a matter of comparative ease and men traveled far to display merchandise while the resources of a continent were converted into new wealth with which to purchase greater comfort, convenience, and opportunity. The standard of living constantly advanced and an ever-increasing proportion of the population entered the fields of industry, commerce, and finance. Cities grew and became the market places for agriculture. Inventive genius perfected machines to relieve more and more hand labor and to produce goods in greater volume. Working days became shorter and time and opportunity for recreation became greater. Education and travel created a desire for comfort, convenience and refinements not dreamed of in earlier generations. Invention after invention revolutionized habits and customs. Electricity added to the length of the day by lighting cities and providing means of rapid, comfortable locomotion. Telephone and telegraph extended communication and nationalized industry, commerce, and finance.

Refrigeration revolutionized the transportation and storage of food products and changed the living habits of the Nation. Fruits, vegetables and fresh meats were transported to distant markets, the production of the whole country was made available to the large consuming centers, and crops of seasonal production were offered to consumers throughout the greater portion of the year. The consumer came to accept unusual service and convenience as a matter of course and finally to demand more. Each new service and convenience drew additional people into the activities of distribution. Time-saving, convenience, comfort, and satisfaction became the determining factors

Digitized by Google

in the excellence of service. More and more facilities were created, more and more people were engaged, with a constant upbuilding of expense, until we have now reached a point where it costs more to distribute and serve than it costs to produce. Commodity values are lost in a maze of service costs, and the time has come for a consideration of the fundamental problem of the economic distribution of the absolute essentials.

The commission is convinced that the problem of distribution is one of the most important economic problems before the American people, and that only through its solution can there be an equitable adjustment among agriculture, industry, transportation, labor, finance, and commerce. The public is so accustomed to the conveniences of modern service that it seldom, if ever, recognizes the fact that the most simple purchase contains the romance of industry, commerce, and human progress. Nor is the public prepared to realize that not only must the producer receive proper compensation for the raw materials but that out of the charge for service along the way the men who operate railroad trains, drive trucks, operate machines, nail boxes, wrap packages, and the men who make deliveries must be enabled to purchase the finished commodity for their families.

Therefore, the solution of the problem of distribution must be secured through a betterment of methods and an elimination of wastes and uneconomic practices. A better system of distribution can only be hoped for through a more intelligent study of methods, facilities, and purposes.

It is the responsibility of the entire people to make such adjustment of custom and habit as will permit the development and establishment of a system of economic distribution which will result in a more equitable relationship between what the producer receives and what the consumer pays.

The products of agriculture usually come into the local market in relatively small lots of ungraded, unstandardized raw material for which the producer assumes no responsibility. The American farmer has been chiefly occupied with the problems of production, involving all the uncontrollable forces of nature and the combating of crop diseases and insect pests. He is concerned with individual production rather than with service, marketing, and distribution. Until such time as the agricultural producer considers production in its relation to consumer demand and satisfaction, he is unlikely to materially improve his condition. At present for the most part the agricultural producers leave to others the selection, grading, standardizing and assembling of products as well as the risks involved in marketing. The vast bulk of agricultural products is transported to large centers for assembling, grading, converting, and distributing. In practically all local markets in which agricultural products are offered beyond the immediate community needs, a variety of agencies exist for the purchase, preparation for market, and handling. The agencies within the local market either immediately or at some later date ship the products to a primary market, i. e., the point of concentration, or to a terminal market, where they are disposed of to converters or standardizers to be prepared for the consuming market.

The first function performed by agencies within the local market is the assembling of numerous small lots of products which have to be graded as to quality, variety, degree of ripeness, and fitness for mar-

Digitized by Google

ket. The great bulk of farm products is harvested and marketed during a small portion of the year, whereas consumers' demand spreads over as large portion of the year as possible. Consumers buy frequently and in exceedingly small quantities, and demand that commodities be conveniently available at a moment's notice. Many of these commodities are highly perishable and must be handled with great rapidity and by means of special and expensive facilities for refrigeration and storage. Consumers in different localities have marked preferences as to grade, appearance, flavor, etc. Satisfaction of consumer preferences begins with the agencies in a local market. This leads to specialization of dealers who handle single commodities or groups of commodities, and leads to further specialization by function, creating a series of successive steps in the movement of commodities toward the consuming market.

The agencies within the local market buy with the consideration of the risks and services involved in assembling, selecting, grading, standardizing, transporting, and marketing products. They establish their margins so far as competitive buying and competitive selling will permit, to protect themselves against the various risks and secure a profit on their transactions.

In communities where production is reasonably uniform and standardized, the agencies within the local market usually pay better prices in the proportion in which their risks are reduced and the degree to which the producer assumes responsibility for the character of his product.

Producers do not always sell their products in local markets, but offer them for sale to buyers or through commission men in primary or terminal markets. In this case they assume the risk of transit and losses and wastes of improper packing, insufficient selection, and grading. When such shipments reach market, the commodities are graded and any portion that is not sufficiently mature, or is blemished or overripe or otherwise unfit for market, is disposed of at the cost of the producer. In such instances the producer not only loses the commodity, but pays the transportation cost of products which should not have been shipped. These occurrences are of sufficient frequency to deserve a most careful study by the producer, of markets and marketing processes.

It is frequently suggested that agricultural products be sold by sample or grade description from markets established close to the centers of production, and that in such markets there be established adequate and efficient warehouses, cold-storage plants, and other facilities for the protection and preservation of raw commodities. In theory at least this suggestion has attractive possibilities in that it would save unnecessary waste and much handling and rehandling and avoid "back-tracking" products from large markets in the redistribution of commodities to smaller communities. This suggestion, however, is predicated upon the theory that standard grades and descriptions can be universally established, and that consumers and dealers would willingly anticipate their requirements to sufficiently provide for a steady flow of products from point of production to place of consumption. It further assumes an intensive distribution within the radius of territory that could absorb the quantities of agricultural products produced within any given center. Under existing conditions consumers find it more convenient to leave the

Digitized by Google

responsibilities of selection and service to the established distributors. There has been a definite effort on the part of the Post Office Department to attract public attention to the opportunities offered by the Parcel Post System for direct trading between producers and consumers. Apparently the consumer has been unwilling to anticipate requirements sufficiently in advance as to assure the producer a continuous market, nor has the producer shown sufficient willingness to assume the responsibilities for quality of product and assurance of service to command the consumer's confidence.

With the better organization and standardization of farm production, the organization of farmers' cooperative associations, the evolution of grades more accurately reflecting the qualities of farm products in relation to use, the establishment of concentration warehouses at points within the areas of production issuing receipts or certificates which clearly indicate such grades and guarantee the physical protection and quality of product, it should be possible to develop a system of commodity exchanges through which these commodities may be sold and under which such products will move directly from areas of production to points of use under prior sale without the necessity of previous inspection and with the assurance of delivery of a product by grade conforming to the users' or consumers' requirements.

There are certain risks which neither the producer nor the consumer is willing to accept, which are now assumed by wholesalers, jobbers, and retailers, and which are reflected in the price received by the producer and the price paid by the consumer. The proposition of distribution involves two factors: The movement of commodities from place of production to point of convenience for consumption, and the handling from the time of production to a convenient time for consumption.

In the primary and terminal markets, commission men, wholesalers, and buyers maintain warehouses, refrigeration, and facilities for the protection and conservation of commodities. The transportation agencies are required to provide facilities for protection of commodities in transit. All of these activities involve investment and operating expense and require the employment of men and equipment.

Practically all facilities in local, primary, and terminal markets are the result of individual initiative or the enterprise of a comparatively small group. This results in a lack of coordination of facilities, utilities, and operations. In the larger centers railroad terminals are scattered to such an extent as to make it necessary for shippers and receivers to transport perishable commodities through the city streets with much congestion, delay, and expense, causing an actual deterioration of perishable products and numerous duplications of handling. All of these things add materially to costs without adding either value or service to the commodity.

Markets for perishables are usually congested, and poorly situated with reference to convenience and economy. It is the belief of the commission that the lack of properly established joint terminal markets is responsible for many of the extravagant costs in the distribution of agricultural products and that steps should be taken by municipalities, transportation companies, and marketing agencies to create facilities for efficient handling and conservation of foodstuffs.

Digitized by Google

While the large bulk of agricultural commodities coming into terminal markets represent the finished products of agricultural producers, they are raw materials to be converted into articles of food, clothing, materials, and finished products of great variety to satisfy the complex demands of modern society. Only a comparatively small portion of the agricultural products would be required to satisfy consumers' requirements for food in its raw state. The consumers are only interested in wheat as the material from which flour and cereals are made, and much of the production of fruit and vegetables comes to the consumers in tin cans and glass bottles. Live stock is of interest to the consumers only as the material from which selected cuts of meat are secured and as the source from which clothing materials, shoes, fabrics, and numerous articles of utility and convenience are derived.

Industries generally have been developed from small institutions conceived by an individual or a few men to meet a comparatively local requirement. Energy, enterprise, and ambition have developed small, local business institutions into vast organizations producing commodities in great volume and distributing them into every section of the country. These concerns reflect the policies, purposes, and ideals of the men who manage them, and are operated with little consideration of any general scheme of economic distribution. Each concern seeks market according to its own theories in competition with all other institutions making similar effort. The primary purpose of manufacture is to operate plants and make commodities. Selling and delivering is a necessary adjunct, considered chiefly as a means to a continuation of manufacture. The processes of manufacture are tangible and lend themselves readily to engineering skill. Therefore manufacturers have reduced production to an almost exact science and in time of competitive need have devised more economical processes of manufacture. This, however, has not been the case in their dealing with the problems of distribution. In the face of competition the tendency has been to exert greater effort to force goods out through the channels of distribution, making greater expenditures, and devising new methods to compel the distribution of their merchandise in competition with similar effort on the part of other manufacturers.

With a view to maintaining a great volume of production, manufacturers have urged wholesalers and retailers to buy in the largest quantities with little regard for the consuming capacity of the communities served by the distributors handling their goods. Each manufacturer has endeavored to command the outlets of distribution by selling in such quantities as would compel the distributor to exert every effort to dispose of the commodities to recover his investment with such profit as he might secure after paying the operating expenses of his business. New agencies, new methods, and new expenditures have been added by individual manufacturers from time to time to maintain a continuous flow of goods through the channels of distribution, and their efforts have been duplicated by the manufacturers of competing goods. These competitive practices of distribution have created a burden from which manufacturers

Digitized by Google

would be glad to be relieved. It is the belief of the commission that manufacturers and other distributive agencies must find relief by securing better knowledge of the consuming capacity of markets and adapting their distributive policies more definitely to the needs of the consumer.

In many lines of manufacture the facilities of production exceed the current capacity of markets, and efforts to produce large volume lead to the production of surplus stocks which can only gradually filter through to the consumer as he is able to use and replace. When this situation develops, plants close down, employees are discharged, and the consuming markets diminish, with the result that the recovery and return to industrial activity is a much slower process than that of producing a surplus of commodities. The function of wholesaling originally was that of creating a market for manufacturers and disposing of merchandise within an easily served radius. The wholesaler carried a reserve stock to supply retailers and was looked upon by the manufacturer as the market outlet for his products. However, with the development of strenuous competition, the manufacturers developed special sales organizations to call upon retail dealers and interest them in new products or to urge them to buy in larger volume products that they were then handling. Under these conditions the wholesaler ceased to be a market creator and relied upon manufacturers to create demand and secure orders which they would fill and distribute. Advertising was looked upon by the manufacturers as a compelling force which would send consumers into retail stores to demand brands or varieties exploited by the manufacturers. Added to this, manufacturers put in the field sample distributors, demonstrators, and canvassers to compel retailers to distribute the commodities thus introduced, with the result that the retailers ceased actively to create markets for new products. Manufacturer after manufacturer repeated the process until the public and the distributor were confronted by a confusing urge to buy more products in constantly increasing variety.

Buying habits were upset and consumers ceased to give their patronage to individual merchants and scattered their buying not only within the community in which they lived but made purchases abroad, either by mail or in person. To overcome this tendency and to attract additional trade, retailers devised new services, greater conveniences, and adopted new selling methods. All of these activities tended to create a greater volume of business and established new merchandising standards, but they also added new expenses in the operation of business. By creating greater volume of business, profits per dollar of sales were reduced, but the tendency has been toward a constantly increasing cost of distribution, until the public now pays more for package, convenience, and service than it pays for the commodity contained in the package.

During the period of development of new commodities and new services, the American standard of living rose to a higher plane than that of any nation on earth, and the cost of living advanced in proportion to the public demands for or acceptance of comfort, convenience, and superlative service. More and more people entered the fields of industry and distribution, and competition became increasingly severe. A constantly increasing proportion of the popu-

Digitized by Google

lation found employment in the activities of handling, transporting, storing, converting, and distributing commodities and meeting new demands for supplemental services. Out of the spread between the producer and the consumer compensation for all of these people must be found, and this brings the American public face to face with the problem of devising a less expensive and more efficient system of distributing the absolute essentials—food, clothing, shelter, and fuel.

The cost of distribution is made up of an infinite number and variety of costs of material and services, each of which influences the others and all of which combine to make the price which the final consumer pays. These factors vary in influence upon one another and upon the final price from year to year, from month to month, and even from day to day. They are each a part of a complex and flexible price structure which is extremely sensitive to governmental, economic, and psychological forces, such as taxes, interest rates, freight rates, custom, habit, usage, and practices of producers, consumers, manufacturers, and distributive agencies.

There is no single factor in this complex price structure which can be said to be primarily or even principally responsible for the spread between producers' and consumers' prices. The elements which compose this spread must be attacked at every point in the chain of producing, manufacturing, and distributing processes. Legislative panaceas can not be effective in improving a situation brought about by the interplay of so many varied and complex factors. The cost of distribution can be reduced by a better understanding of the elements which compose it, the relationship of the agencies through which commodities are distributed, and a concerted and conscious effort on the part of producing, manufacturing, and distributing agencies to eliminate unnecessary and wasteful practices and processes, to adopt more efficient methods, and to more definitely relate these processes to one another, so that there can be a continuous flow of commodities from producer to consumer in response to known demands. In this effort the understanding and cooperation of the producer and consumer is also an absolute essential.

While the commission is unable to point out a remedy, legislative or economic, which of itself will reduce the spread between producers' and consumers' prices, the commission is able to make certain suggestions based upon the facts developed by its investigation, which it believes will point the direction in which, and indicate the method by which improvements and economies in distributive processes can be made.

CONCLUSIONS.

The commission believes that the situation of the agricultural producer can be materially improved by a standardization of production of crops in producing centers so as to permit more economic selection, grading, and preparation of commodities in the producer's local markets and recommends that the agricultural producers of the United States be encouraged to develop cooperative associations to hasten the standardization of agricultural production, improve the distributive processes, and reduce their costs.

With the development of cooperative marketing organizations, production becomes more uniform and better standardized with

Digitized by Google

benefit to the producers, distributors, and consumers. The Federal Government has recognized the economic value of agricultural producers' organization for the purpose of cooperatively producing, preparing, and marketing products by removing the limitations which have previously retarded the full development of such organizations. The State and Federal Governments should affirmatively promote and encourage cooperative enterprise. Both State and Federal Governments should enact the necessary legislation to assure cooperative associations against unfair discriminations and to insure such associations against unfair practices.

Through such cooperative organizations groups of producers can assume responsibility for the kind, character, and grade of commodity offered for sale. Where this is done agricultural producers will participate to a greater degree in the price paid by the ultimate consumer, while the distributive agencies assume less risk, expense, and responsibility and, in consequence, distribute more economically.

Agricultural producers can greatly improve their situation by developing better knowledge of the marketing and distributive processes through which their products reach the ultimate consumer and, on the basis of such knowledge, adapt their production, products, preparation, and selection to the satisfaction of consumer requirements. This tends to the establishment of more permanent market relations, less speculative handling, and a steadier flow of commodity from producer to consumer.

New economies can be brought about through the development of greater uniformity of products, grades, standards, and containers, together with an improvement in methods of handling by agencies in local, primary, and terminal markets which will tend to create greater certainty on the part of the receiver and the part of the producer as to the salability of products. With such improvement the many disagreements can be eliminated which develop between producers, shippers, and receivers and which are now the cause of a lack of mutual confidence, with the consequent development of more efficient and economic marketing and distribution.

The standardization of products and containers makes possible a wider distribution of commodities and so tends to extend the market for them.

Economies can be effected and wastes can be eliminated through the establishment of qualified and authorized agencies to arbitrate disagreements between shippers and receivers as to value, condition, kind, grade, and quantity of commodities. Such agencies may be established either through agreement between shippers and receivers to set up disinterested boards of arbitration whose findings can be accepted as final, or through the establishment of State or Federal agencies of arbitration authorized by legislation.

Much unnecessary waste and expense in distribution can be eliminated through the development of adequate, organized, and correlated terminal markets. By minimizing movement of commodities from terminal to terminal or from terminal to central market, the expense involved in the employment of an unnecessarily large number of men and much unnecessary equipment would be eliminated.

The commission believes that the Congress should speedily reenact legislation looking to the regulation of future trading in grain in accordance with sound constitutional conceptions.

Digitized by Google

Much can be accomplished in the direction of economic distribution by a more systematic utilization of warehouses to absorb temporary surplus and distribute more evenly in response to consuming demand. There is a tendency toward better distribution as warehouses come to function as reservoirs to facilitate economic distribution and adopt methods which diminish opportunity for speculation in stored commodities.

There can be great improvement in the distribution of perishable products through the establishment of more adequate central wholesale markets and a more uniform flow of perishable products from producers to consumers with less waste and expense.

Converters of agricultural products can materially reduce the cost of distribution of trade-marked commodities by adjusting production more definitely to the current consuming requirements of the public. The effort to move a large volume in advance of current requirements creates an unnecessarily expensive distribution of trade-marked commodities. In the effort to reduce the cost of production by creating great volume of manufacture, converters have developed a policy of forced distribution, resulting in the accumulation of large stocks of idle merchandise in the hands of wholesalers, retailers, and other distributors. These stocks of idle merchandise carry a constantly accumulating burden of invested capital, credit, interest, insurance, rent, and depreciation which becomes a part of the cost of distribution. The competition between manufacturers of parallel lines for limited market is carried to the point of extravagant expenditure with a consequent increased burden of cost to the consumer.

There can be developed an economic distribution of essential commodities when the industrial production of the country is based upon a better knowledge of the requirements of consumer and a recognition of the fact that distributive agents can not function economically except as they maintain an even, continuous flow of merchandise through the channels of distribution. It is the function of wholesale and retail distributive agencies to make available to the consumer all of the essential commodities on an equal basis. Any effort on the part of individual manufacturers to dominate the outlets of distribution to the disadvantage of other manufacturers develops an uneconomic burden of expense to the consumer and leads to an interruption of the operation of distribution.

Wholesalers can reduce the burden of overhead costs by purchasing stocks which can be turned with economic frequency. There is a growing tendency on the part of wholesalers to enter products under their own labels into competition with the goods of the manufacturers they serve. This in a measure destroys the confidence of the manufacturer and leads to retaliatory expenditure, which becomes a part of the cost of distribution.

There is a tendency on the part of the manufacturer and wholesaler to undertake distribution over larger territories than can be intensively and economically served. Where too extensive distribution has developed, accounts become scattered, selling costs, advertising, and transportation become extravagant and wasteful. When manufacturers and wholesalers go beyond a radius of economical distribution, they come into competition with an increasingly large

Digitized by Google

number of other manufacturers and wholesalers making similar effort to dominate market, thereby creating a duplication of wasteful expense that attaches to the cost of distribution.

Retailers can materially improve their situation and reduce the cost of distribution through the development of more complete knowledge of the requirements of the consumers whom they serve. It is the function of the retailer to serve as a purchasing agent for the consumers within the community in which he is located, and to perform this service properly it is necessary for him to know the kind and amount of commodities required. Failure to maintain a balance between purchase of merchandise and the ability of the community to consume creates a larger burden of operating cost than economic distribution will justify.

An ideal distribution of essential commodities would require a continuous flow of raw materials into the processes of manufacture and an equally steady flow of finished products through the channels of distribution, to be consumed and replaced as rapidly as they are produced. This would avoid overproduction with consequent periods of unemployment and restricted purchasing power on the part of industrial consumers. A steady, even flow of products from producer to consumer would result in a frequency of stock turns on the part of the wholesaler and retailer which would place against the unit of commodity the smallest possible burden of cost. Economic distribution of essential commodities can not be secured on any other basis than that of continuous production in response to continuous demand and a constant movement of products toward the consumer, with a minimum of handling costs between the producer and consumer.

Permanent solutions of the problems of distribution must come as a result of a higher standard of knowledge and ability on the part of producers, manufacturers, transporters, storers, and distributors, and a more enlightened recognition of their obligation to the public. Trade associations, soundly conceived and organized, can be made useful instruments for research, with a view to developing more efficient methods of manufacture and distribution and for introduction among their members of improved methods and practices as well as for creating more definite relationship between the various agencies engaged in production, manufacture, and distribution.

Governmental agencies should cooperate with producers, trade and labor organizations, and with each other to secure more accurate and current statistical data of production, prices, movement and consumption of commodities, and to promote standardization of product and service as well as the knowledge of improved method and practice and more effective relationship between the various agencies engaged in production, manufacture, and distribution.

Consumers can cooperate to reduce the cost of distribution by assuming a greater responsibility in securing the commodities they require, instead of depending upon retailers to display a great variety of goods with superlative convenience, and spacious display rooms with extravagant furnishings, fixtures, and facilities. Such environment is created in response to consumer demands and must be paid for out of the purchase price of the merchandise the consumers buy.

Digitized by Google

The distributive situation will be better appreciated when consumers realize that out of 41,614,248 people engaged in gainful occupation, 29,570,867 are engaged in manufacturing, transportation, distribution, and allied activities, and that the people thus engaged are contributing the comforts, conveniences, services, and operations that make the present standard of living possible.

Grade schools, high schools, colleges, and universities should teach in a practical way the factors involved in producing and distributing essential commodities. Children should be taught to appreciate the cost and value of the services performed in providing modern comfort, convenience, and opportunity.

Digitized by Google

Chapter I.

MARKETING.

The commission was charged with the duty of discovering the ca
of the wide difference between the price of agricultural products p
to the producer and the ultimate cost to the consumer.

For convenience and clearness this section (part 4) of the comm
sion's report is prepared in three general divisions, as follows:

Marketing—which treats with agricultural products from the ti
they come into the producer's local market until they are sold
the converter or the agent who performs the first operation
distribution. In the case of grain the converter is the miller
cereal manufacturer and in live stock the converter is the pack
In the case of fruits and vegetables and other perishable commo
ities that are not changed in form to meet the requirements of t
consumer, marketing would include all transactions, including stor
up to the wholesale distributor, auction, or the retailer, when
wholesale distributor intervenes.

Conversion—which treats with the process of converting
agricultural products into food, cloth, leather, etc.

Distribution—which treats with the movement, storage, and s
of finished products from one agency to another until they reach
consumer.

Each of these general subjects is divided into chapters cover
specific functions or groups of functions.

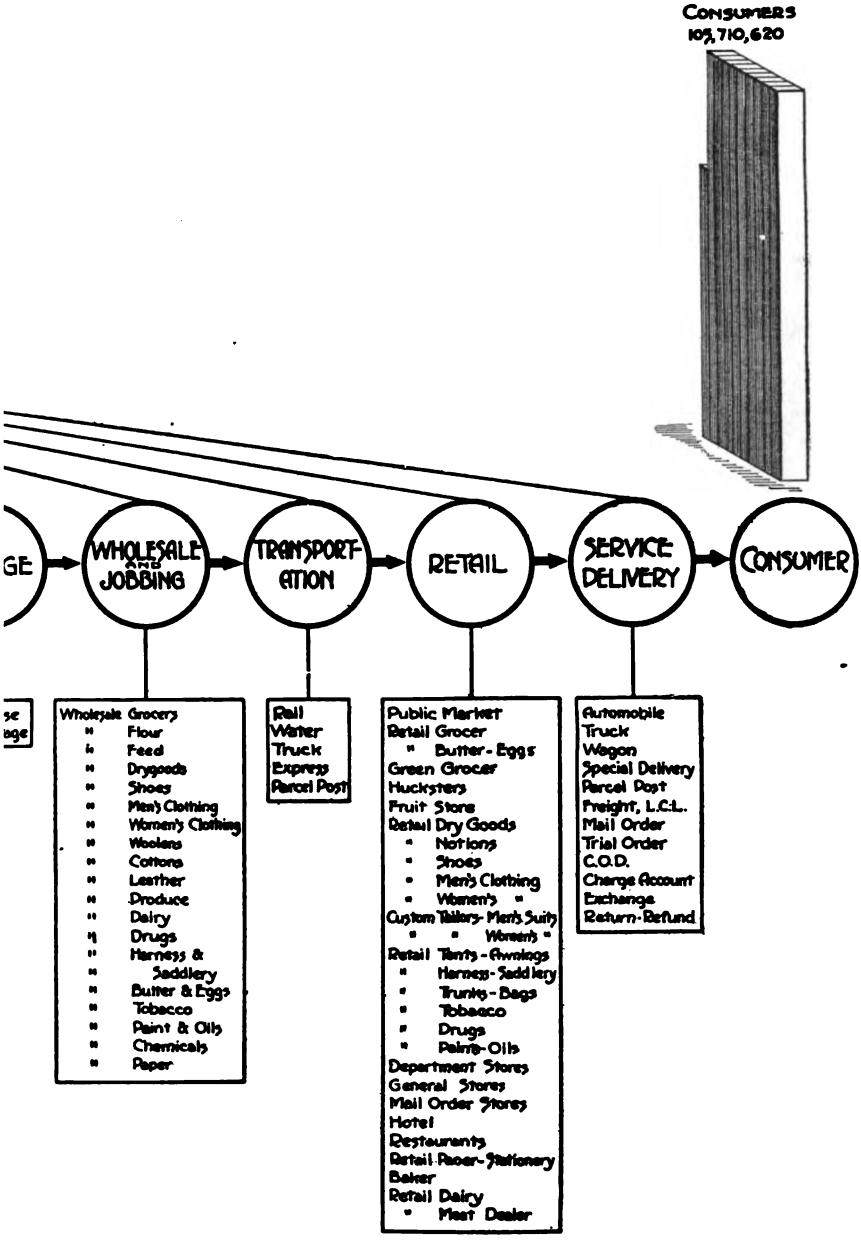
Investigations of this nature have been frequently undertaken, b
because no governmental department or other organization has c
related data for a period of years, little had been accomplished
throw light upon the numerous problems of marketing, transporti
converting, storing, and distributing agricultural commodities a
the products into which they are converted.

With no data or reliable statistics extant, it was necessary
the commission to undertake a pioneering effort in an unexplo
field. This required the setting up of an organization to sec
original material from fundamental sources.

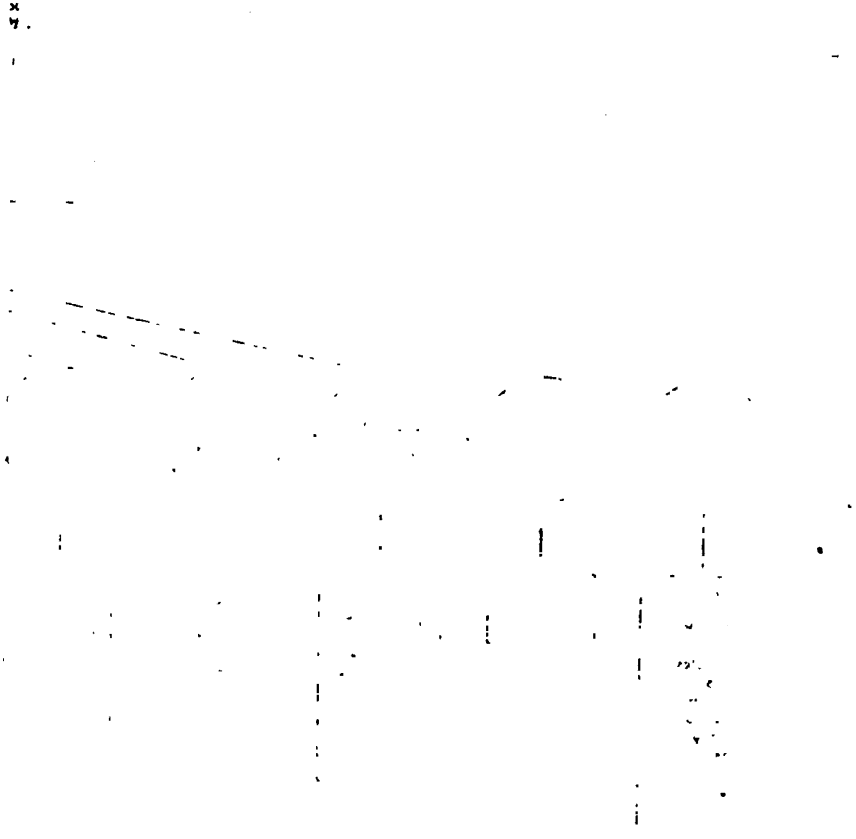
All previous efforts of this nature have been undertaken at
point of production. For example, in seeking to find the differe
between the price paid to the producer for wheat and the price p
by the consumer for bread, the effort has been to find the price
the local market in which the producer sold his wheat and then fol
the wheat step by step through the local elevator to the primary
terminal elevator into the mill and through the processes of con
sion into flour, and as flour through the hands of the wholes
baker, and retailer.

It is obvious that the identity of the wheat is lost as it p
through the elevators and into cars and through other elevat

Digitized by Google



Digitized by Google



Digitized by Google

where it becomes mixed with grain from many sources. It is even more difficult to retain the identity of wheat as it is converted into flour and by-products, and it is equally difficult to retain the identity of the flour as it is blended by the manufacturing baker and converted into bread.

However, the commission has been successful in finding the spread between the price the producer receives for wheat in his local market and the price the consumer pays for the bread at some distant point. This result has been accomplished by reversing the usual procedure, starting with the loaf of bread and working back through the retailer, the manufacturing baker, to the miller, to the terminal elevator, to the local elevator, and there establishing the relationship of the price of the wheat to the price of the bread.

As far as possible the same process has been followed in finding the relationship between the price paid to the agricultural producer for each product and the cost of the same commodity in its final form to the consumer.

Diagram 1, opposite page 14, presents all of the commodities, movements, services, and operations that intervene between the producer of agricultural products and the consumer.

Table A is based upon data prepared by the Department of Commerce, Bureau of Census, from statistics secured from the Fourteenth Census of the United States, 1920, and shows the division of the population by occupation, and indicates that of 41,614,248 people engaged in gainful occupations, 29,570,867 are engaged in manufacture, transportation, distribution and allied activities and services.

TABLE A.—*Total persons 10 years of age and over engaged in gainful occupations in 1920.*

General division of occupations.	Number.	Per cent distribution.
BOTH SEXES.		
Agriculture, forestry, and animal husbandry	10,953,158	26.3
Extraction of minerals	1,090,223	2.6
Manufacturing and mechanical industries	12,818,524	30.8
Transportation	3,063,582	7.4
Trade	4,242,979	10.2
Public service (not elsewhere classified)	770,460	1.8
Professional service	2,143,889	5.2
Domestic and personal service	3,404,892	8.2
Clerical occupations	3,126,541	7.5
All occupations	41,614,248	100

The products of agriculture generally come into the local market as ungraded, unstandardized, raw material. Until recently the American farmer has been chiefly concerned with the problems of production involving all of the uncontrollable forces of nature, crop diseases, insect pests, etc. He has thought in terms of production rather than in terms of market and consumer requirements, and as an individual producer offered his product in insufficient quantity materially to influence the prices offered. He may offer certain of his commodities for local consumption, either through a local dealer, public market, or by delivered sales to consumers within his community. The vast bulk of his products, however, must be transported to larger centers

Digitized by Google

for assembling, grading, converting, and distributing. In practically all local markets in which products are offered beyond the immediate community needs various agencies exist for the purchase, preparation for market, and handling of the various agricultural products.

The agencies within the local market, either immediately or at some later date, ship the products to a primary market, or point of concentration, or to a terminal market where they are disposed of to converters or standardizers to be prepared for the consumer market.

Diagram 1 calls attention to the fact that as agricultural products move toward the ultimate consumer they constantly accumulate additional services and combine with other materials involving manufacturing operations, labor, capital, credit, insurance, storage transportation, selling, and merchandising.

Distribution not only involves transportation from the place of production to the place of consumption but also includes carrying from the time of production to the time of consumption.

Modern conditions demand a multiplicity of services unknown to any previous generation and a variety of products that could not be catalogued within the space of this entire report.

There is hardly a commodity in daily use that does not reflect the combined services of a great many people. One need go no further than to consider the paper and twine with which purchases are wrapped to see the reflected activities of the cotton grower, hauling his product to market to be ginned, transported, and converted into cotton string to be distributed through dealers and transported to its final user. The by-product of this same cotton to some degree enters into the manufacture of paper to go through the processes of distribution to be delivered to the retailer for the convenience of the public.

A careful study of diagram 1, previously referred to, will suggest tracing any agricultural product through the various steps and processes by which it reaches the consumer in its ultimate form. One can not follow any commodity through its journeyings and conversion without appreciating the fact that from the forests and the mines were gathered the materials out of which buildings and machinery are created. Rails, locomotives, and cars must be produced and railroads operated to permit the erection of manufacturing plants and transportation of raw material to the manufacturer and finished products to a point convenient to the consumer.

In the following chapters the marketing and distribution of the major crop groups will be specifically presented.

The volume of production of agricultural crops and their consumption and distribution is comprehensively presented in part 1 of the commission's report, entitled "The Agricultural Crisis and Its Causes." Therefore, to avoid repetition, no figures of production and consumption are presented in this part of the report.

Digitized by Google

Chapter II.

GRAIN.

Diagram 2, opposite this page, shows the detail of distribution of wheat and wheat products, and shows the agencies to whom the producer may offer his wheat in his local market and the operations of distribution through primary and terminal markets and the functions to be performed in each instance. The diagram also shows the contributing services that relate to the movement and handling of wheat and wheat products. Other grains travel toward market in a manner somewhat similar to wheat.

LOCAL MARKET.

The agencies within the local market are presumed to introduce a sufficient element of competition to secure for the producer the advantages to which demand for his product would entitle him. This, however, is not the invariable effect, because competitive buying agencies endeavor to avoid disruption of the market through unusual bidding for commodity, and are limited for their profit to competition with other buying centers. The local price is based on the current price in terminal market for the product of similar grade, less transportation, handling costs, and profit.

Figures which will accurately reflect country elevator margins and transportation costs from country shipping points to terminal, in their relation to the price paid to the producer by the country elevator and the price at the terminal, are exceedingly difficult to obtain. Country elevator margins differ somewhat with the methods employed in various parts of the country in buying grain and with the competitive conditions existing at the terminal and country elevator points. Grain bought by the country elevator is seldom sold on the same day on which it is purchased from the farmer, and the price received by the country elevator at the terminal, therefore, depends upon the course of the market between the time the grain is bought at the country elevator and the time it is sold at the terminal. Possible losses due to declining market between the date of purchase and sale are usually but not invariably minimized by the country elevator through "hedging" operations. "Hedging" operations have been fully described in the report of the Federal Trade Commission on the grain trade and will not be discussed in detail in this report. The Federal Trade Commission states:

> "Hedging" is the term commonly applied by the grain trade to the method employed by many dealers in cash grain of protecting themselves against losses due to market fluctuations by executing with cash purchases and sales practically simultaneous "future" transactions upon the opposite side of the market. This is done upon the assumption that the prices of cash and future grain will move up and down together and that, as the trades are on opposite sides of the market, the decline or advance of either will be compensated by a corresponding fluctuation in the other.

Digitized by Google

That is to say, the loss or profit upon the cash purchase or sale will be offset by the profit or loss on the future purchase or sale.

In the Northwest grain is usually sold on consignment, while in the Southwest it is sold either "on track" at the country elevator or "to arrive" at the terminal. Generally speaking, margins are somewhat higher in the Northwest than in the Southwest, but whatever method may be adopted by the country elevator in the sale of grain, it is usually purchased in the Northwest by the country elevator on the basis of closing cash price, less transportation cost and the country elevator margin, and in the Southwest on the basis of "track bids" at the country elevator, less the country elevator margin, or on the basis of "to arrive" bids at the terminal, less the cost of transportation and the country elevator margin.

In general, therefore, grain is bought at the country elevator on the basis of the terminal price less transportation and handling charges at the country elevator on the day of purchase. These handling charges tend to rise as prices increase, and to fall as prices decline. Usually, however, margins decline less rapidly than prices in periods of declining price levels, and this tends to widen the margin between the producers' price and the terminal price. Widening of the margin in periods of declining prices is largely due to the effort of the country elevator operator to reduce his losses in a declining market by buying from the farmer as cheaply as possible, so as to afford a wide margin against losses at the terminal market. In view of the widely differing methods and the conditions existing in the country, an average figure fairly representative of the handling margin of the country elevator is exceedingly difficult to obtain and such a figure can be arrived at only on the basis of an examination of a sufficient volume of transactions to afford a fairly representative average.

In seeking such a representative average figure the commission secured the prices paid for grain at various typical shipping points on the third Tuesday of each month of the crop year, and the average terminal cash price of the same grade and quality of grain on the same date. The transportation cost per bushel was then deducted from the terminal price and the country elevator margin was then determined by deducting from the remainder the price paid to the producer on the same date. The result of these deductions was assumed to represent the handling margin taken by the country elevator.

Tables A2 to A12 on pages 23 to 35, inclusive, show the price paid to producers for wheat at the country elevators in typical producing centers averaged for the year, the terminal price for cash grain on the same date averaged for the year, the transportation cost per bushel, and the handling charges calculated as above indicated for the crop years 1912–13, 1915–16, and 1920–21. While a great effort was made to secure a volume of transactions sufficient to produce a representative average, the number of transactions is not sufficient to justify a comparison of transportation charges or country-elevator margins as between different shipping and receiving points.

The average country-elevator margin on wheat shown by these tables was, in 1912–13, 6.15 cents per bushel; in 1915–16, 7.76 cents

Digitized by Google

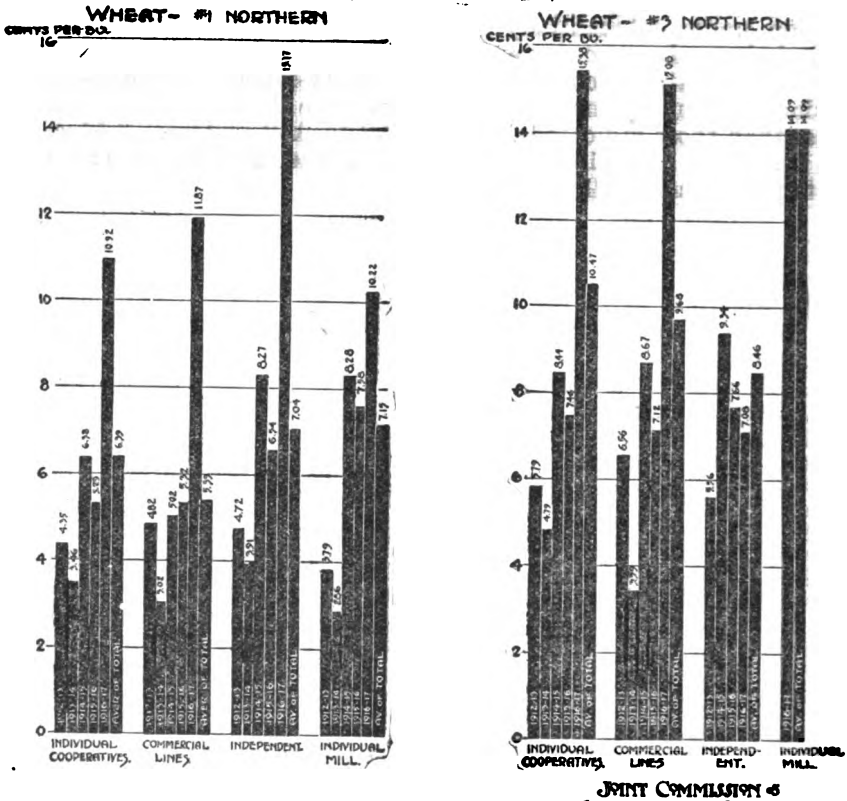
per bushel; and in 1920–21, 16.21 cents per bushel. The average country-elevator margin in 1912–13 for No. 1 and No. 3 northern wheat was 5.23 cents per bushel; in 1915–16, 6.37 cents per bushel; and in 1920–21, 6.38 cents per bushel; as shown by Chart A, page 20, and Table A1, page 21, compiled by the Federal Trade Commission under substantially the same method as that used by the commission. In a more recent report of the Federal Trade Commission, Senate Document No. 40, Sixty-seventh Congress, first session, the buying margins on all grain are shown to be somewhat lower than those indicated in Tables A2 to A12 and were 3.55 cents per bushel in 1915–16, 6.03 cents per bushel in 1916–17, and 8.05 cents per bushel in 1919–20.

Digitized by Google

Chart A.

ELEVATOR BUYING MARGINS

AVERAGE OF DIFFERENT TYPES OF ELEVATORS, - Crop Years 1913-14 to 1916-17.



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A1.—*Average buying margins of different types of elevators on specified grades of grains during the crop years 1912–13 to 1916–17.*[1]

[Federal Trade Commission.]

Type and period.	No. 1 northern.		No. 3 northern.	
	Number of daily margins.	Average margin in cents per bushel.	Number of daily margins.	Average margin in cents per bushel.
1912–13.				
Individual cooperatives	949	+4.35	176	+5.79
Commercial lines [2]	2,394	+4.86	29	+6.56
Independent	339	+4.72	49	+5.56
Individual mill	195	+3.79	.....	.....
Total	3,877	+4.64	254	+5.83
1913–14.				
Individual cooperatives	1,334	+3.46	7	+4.79
Commercial lines [2]	3,044	+3.02	74	+3.39
Independent	641	+3.91	.....	.....
Individual mill	131	+2.86	.....	.....
Total	5,150	+3.24	81	+3.52
1914–15.				
Individual cooperatives	1,482	+6.38	617	+8.44
Commercial lines [2]	2,430	+5.02	1,102	+8.67
Independent	503	+8.27	303	+9.34
Individual mill	277	+8.28	.....	.....
Total	4,692	+5.99	2,022	+8.70
1915–16.				
Individual cooperatives	3,669	+5.29	356	+7.46
Commercial lines [2]	6,212	+5.39	830	+7.12
Independent	1,094	+6.54	111	+7.66
Individual mill	350	+7.58	.....	.....
Total	11,325	+5.50	1,297	+7.26
1916–17.				
Individual cooperatives	2,197	+10.92	649	+15.38
Commercial lines [2]	1,529	+11.87	703	+15.08
Independent	327	+15.17	27	+7.08
Individual mill	294	+10.22	41	+14.09
Total	4,297	+11.55	1,420	+15.03
1912–1917				
Individual cooperatives	9,631	+6.39	1,805	+10.47
Commercial lines [2]	15,508	+5.39	2,738	+9.68
Independent	2,914	+7.04	490	+8.46
Individual mill	1,197	+7.15	41	+14.09
Total	29,249	+5.95	5,074	+9.88

[1] Difference between the average daily prices paid by country elevators and the terminal market price (less freight) at which the greatest number of cars was sold on the same day.

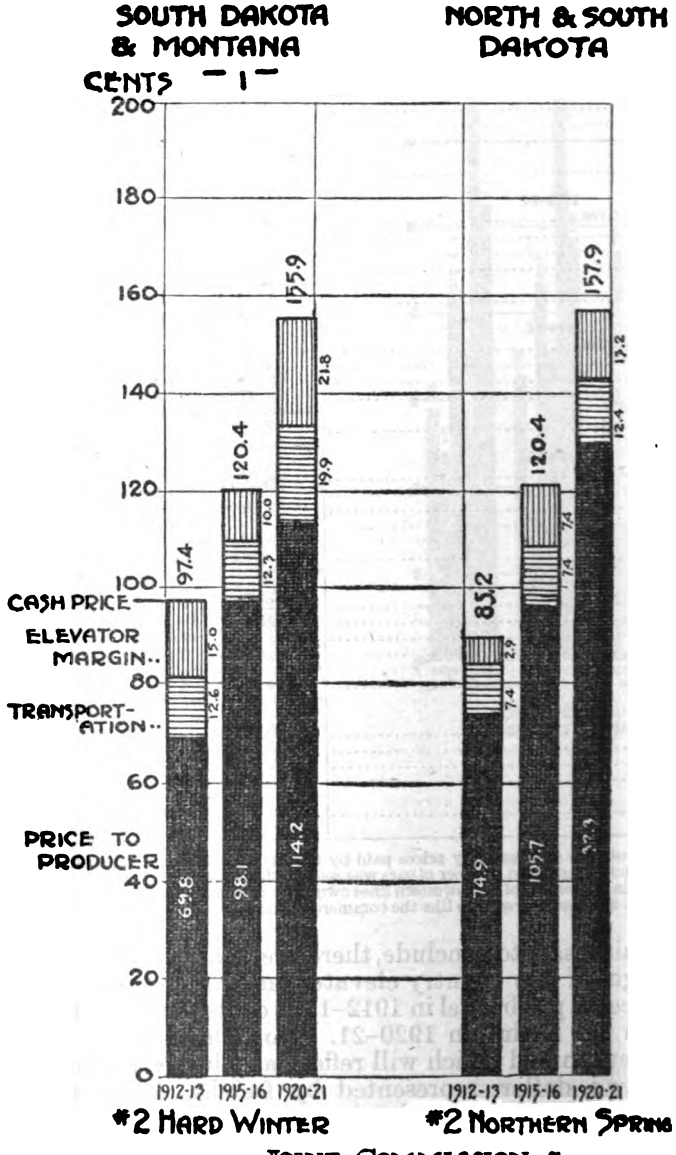
[2] Includes a certain proportion of northwestern lines owned by or affiliated with mills, but which operate as merchandisers in all essential respects like the commercial lines.

It seems fairly safe to conclude, therefore, that in general the average buying margin of the country elevator on wheat may be assumed to have been 5 cents per bushel in 1912–13, 6 cents per bushel in 1915–16, and 13 cents per bushel in 1920–21. No figure has been or can be accurately determined which will reflect absolutely the proportion of the consumer's dollar represented by freight, owing to the wide fluctuations in the distance the commodity is transported and the rates applicable to the various commodities which may enter into the article purchased by the final consumer. The best figures obtainable, however, indicate that transportation represented in 1914 approximately 6 per cent of the sales price and in 1921 approximately 10 per cent.

Digitized by Google

Chart A 1.

WHEAT
TO MINNEAPOLIS, MINN.
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A2.—NO. 2 HARD WINTER WHEAT AT MINNEAPOLIS FROM EIGHT TYPICAL POINTS IN SOUTH DAKOTA AND MONTANA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	69.8	98.1	114.2	Elevator margin	15.0	10.0	21.8
Transportation	12.6	12.3	19.9	Terminal price	97.4	120.4	155.9

TABLE A3.—NO. 2 NORTHERN SPRING WHEAT AT MINNEAPOLIS FROM 20 TYPICAL POINTS IN NORTH AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	74.9	105.7	132.3	Elevator margin	2.9	7.4	13.2
Transportation	7.4	7.4	12.4	Terminal price	85.2	120.5	157.9

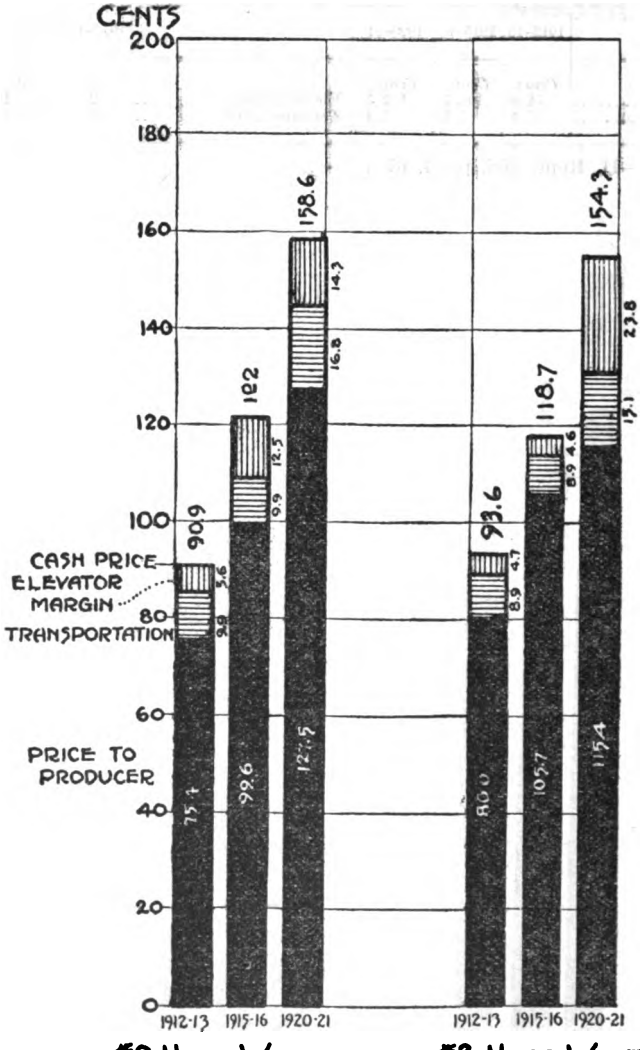
70678°—H. Rept. 408, pt. 4, 67–1——3

Digitized by Google

Chart A 2.

WHEAT
TO CHICAGO, ILL.
FROM

SOUTH DAKOTA & IOWA — IOWA



#2 HARD WINTER — #3 HARD WINTER

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

ABLE A4.—NO. 2 HARD WINTER WHEAT AT CHICAGO FROM 17 TYPICAL POINTS IN SOUTH DAKOTA AND IOWA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
rice to producer	75.4	99.6	127.5	Elevator margin	5.6	12.5	14.3
ransportation	9.9	9.9	16.8	Terminal price	90.9	122.0	158.6

ABLE A5.—NO. 3 HARD WINTER WHEAT AT CHICAGO FROM 10 TYPICAL POINTS IN IOWA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	80.0	105.7	115.4	Elevator margin	4.7	[1] 0.5	23.8
Transportation	8.9	8.9	15.1	Terminal price	93.6	114.1	154.3

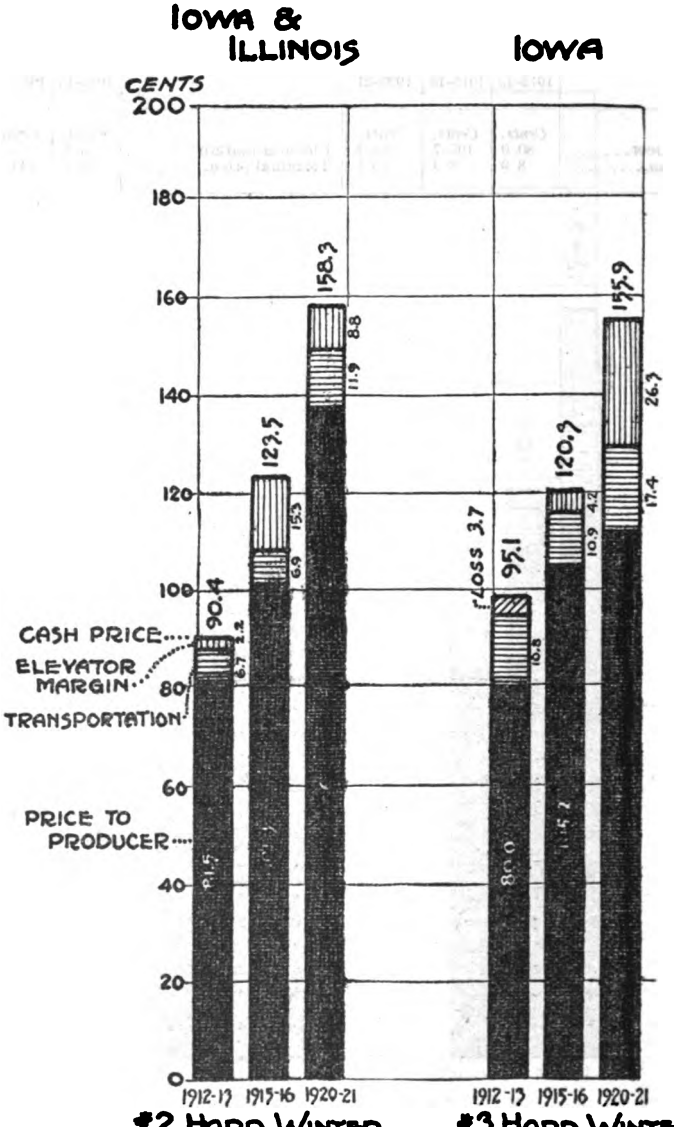
[1] Loss.

Digitized by Google

Chart A 3.

WHEAT
TO ST. LOUIS, MO.

FROM



#2 HARD WINTER #3 HARD WINTER

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A6.—NO. 2 HARD WINTER WHEAT AT ST. LOUIS FROM 12 TYPICAL POINTS IN IOWA AND ILLINOIS.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	81.5	101.3	137.6	Elevator margin	2.2	15.3	8.8
Transportation	6.7	6.9	11.9	Terminal price	90.4	123.5	158.3

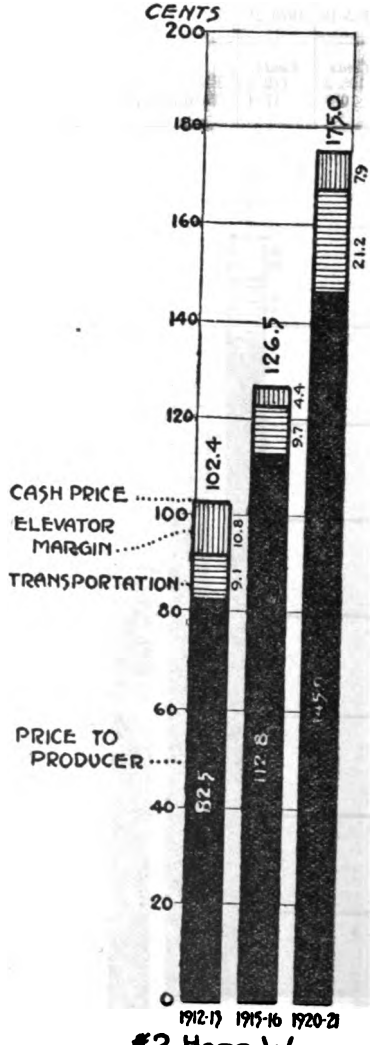
TABLE A7.—NO. 3 HARD WINTER WHEAT AT ST. LOUIS FROM 9 TYPICAL POINTS IN IOWA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	80.0	105.2	112.1	Elevator margin	4.3	4.2	26.3
Transportation	10.8	10.9	17.4	Terminal price	95.1	120.3	155.8

Digitized by Google

Chart A 4.

WHEAT
TO BALTIMORE, MD.
FROM
OHIO & INDIANA



#2 HARD WINTER

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A8.—NO. 2 HARD WINTER WHEAT AT BALTIMORE FROM 10 TYPICAL POINTS IN OHIO AND INDIANA.

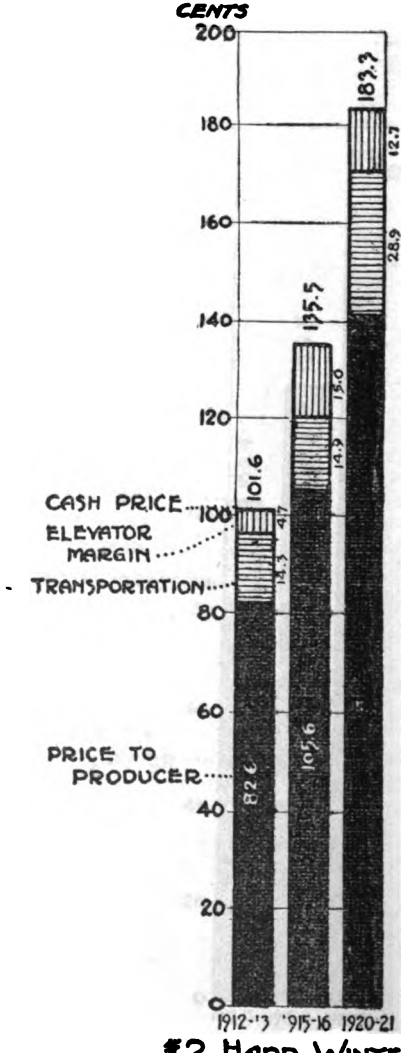
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	82.5	112.8	145.9	Elevator margin	10.8	4.0	7.9
Transportation	9.1	9.7	21.2	Terminal price	102.4	126.5	175.0

Digitized by Google

Chart A 5.

WHEAT
TO NEW YORK

FROM IOWA, ILLINOIS & OHIO



#2 HARD WINTER

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

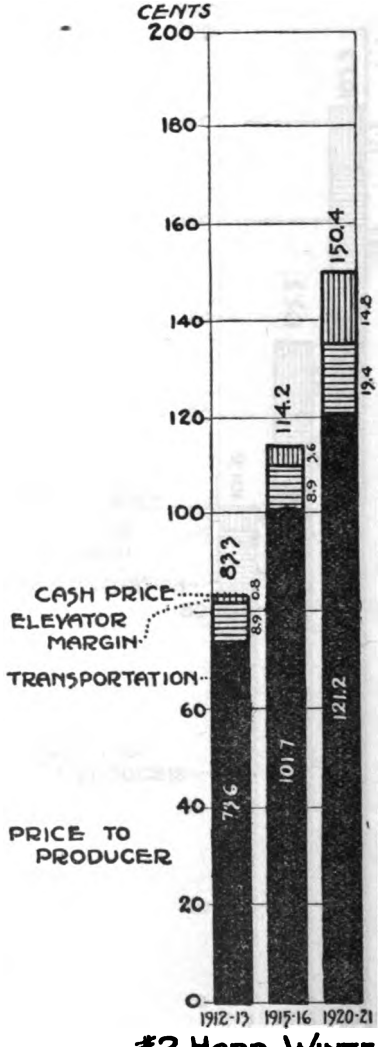
TABLE A9.—NO. 2 HARD WINTER WHEAT AT NEW YORK FROM 11 TYPICAL POINTS IN IOWA, ILLINOIS, AND OHIO.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	82.6	105.6	141.7	Elevator margin	4.7	15.0	12.7
Transportation	14.3	14.9	28.9	Terminal price	101.6	135.5	183.3

Digitized by Google

Chart A 6.

WHEAT
TO OMAHA, NEB.
FROM
COLORADO, NEBRASKA, & SOUTH DAKOTA



#2 HARD WINTER

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

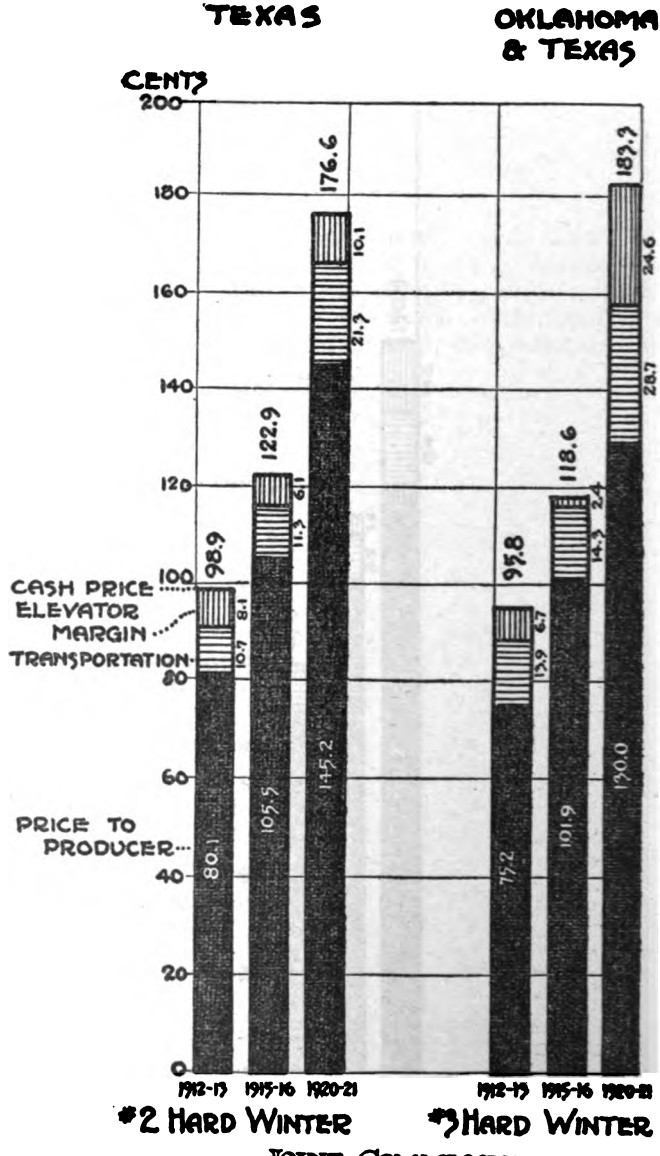
LE A10.—NO. 2 HARD WINTER WHEAT AT OMAHA FROM 15 TYPICAL POINTS IN COLORADO, NEBRASKA, AND SOUTH DAKOTA.

	1912–13	1915–16	[illegible]		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
e to producer.....	73.6	101.7	121.2	Elevator margin.....	0.8	3.6	14.8
nsportation.....	8.9	8.9	14.8	Terminal price.....	83.3	114.2	150.4

Digitized by Google

Chart A 7.

WHEAT
TO GALVESTON, TEX.
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A11.—NO. 2 HARD WINTER WHEAT TO GALVESTON FROM 6 TYPICAL POINTS IN TEXAS.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	80.1	105.5	145.2	Elevator margin	8.1	6.1	10.1
Transportation	10.7	11.3	21.3	Terminal price	98.9	122.9	176.6

TABLE A12.—NO. 3 HARD WINTER WHEAT AT GALVESTON FROM 9 TYPICAL POINTS IN OKLAHOMA AND TEXAS.

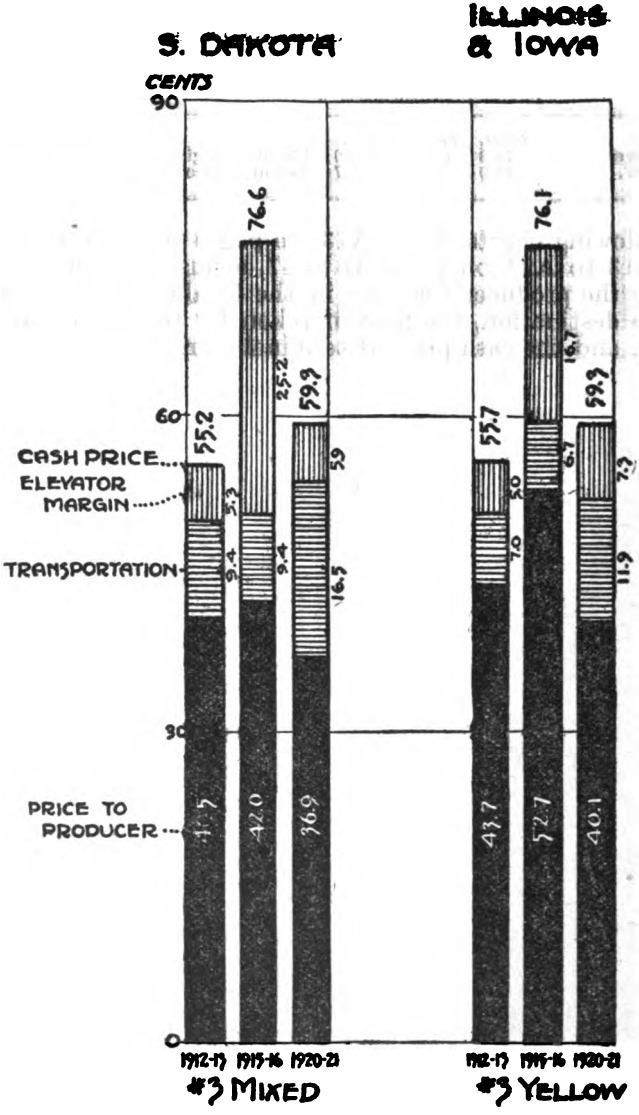
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	75.2	101.9	130.0	Elevator margin	6.7	2.4	24.6
Transportation	13.9	14.3	28.7	Terminal price	95.8	118.6	183.3

The following charts, A8 to A13, on pages 36 to 46, inclusive, and Tables A13 to A22, on pages 37 to 47, inclusive, show the price received by the producer for corn in the local market, the amount of freight to destination, the margin taken by the local and terminal elevators, and the cash price at terminal market.

Digitized by Google

Chart A 8.

CORN
TO MINNEAPOLIS, MINN.
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

BLE A13.—No. 3 MIXED CORN AT MINNEAPOLIS FROM SEVEN TYPICAL POINTS IN SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
e to producer	40.5	42.0	38.9	Elevator margin	5.3	25.2	5.9
nsportation	9.4	9.4	16.5	Terminal price	55.2	76.6	59.3

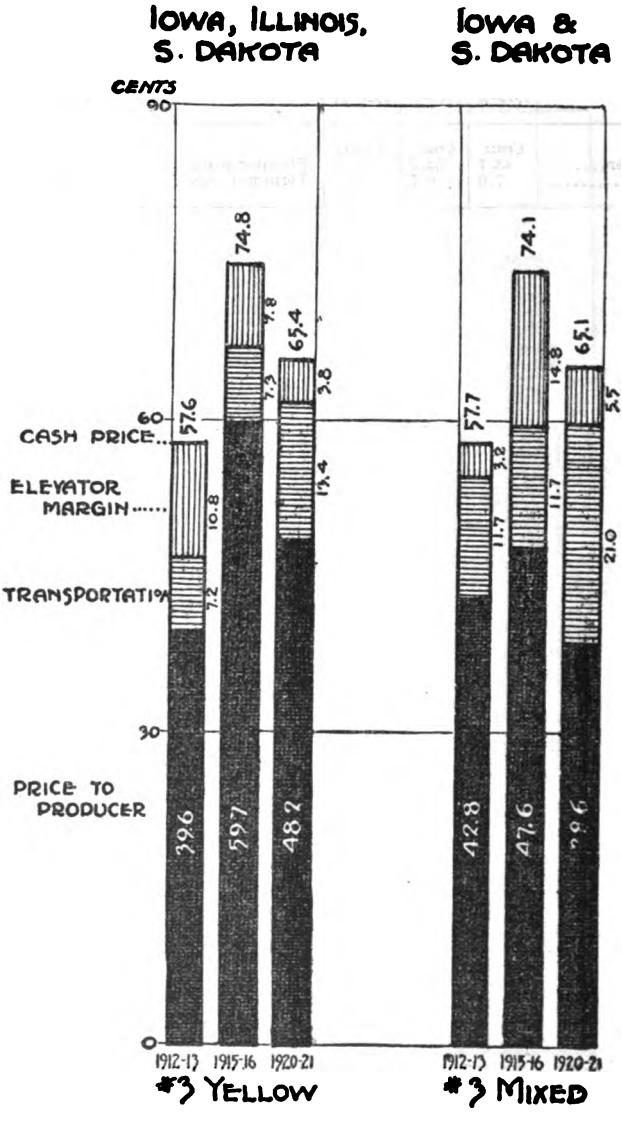
BLE A14.—No. 3 YELLOW CORN AT MINNEAPOLIS FROM SIX TYPICAL POINTS IN ILLINOIS AND IOWA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
e to producer	43.7	52.7	40.1	Elevator margin	5.0	16.7	7.3
nsportation	7.0	6.7	11.9	Terminal price	55.7	76.1	59.3

Digitized by Google

Chart A 9.

CORN
TO CHICAGO, ILL.
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A15.—No. 3 YELLOW CORN AT CHICAGO FROM 16 TYPICAL POINTS IN IOWA, ILLINOIS, AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	39.6	59.7	48.2	Elevator margin	10.8	7.8	3.8
Transportation	7.2	7.3	13.4	Terminal price	57.6	74.8	65.4

TABLE A16.—No. 3 MIXED CORN AT CHICAGO FROM 10 TYPICAL POINTS IN IOWA AND SOUTH DAKOTA.

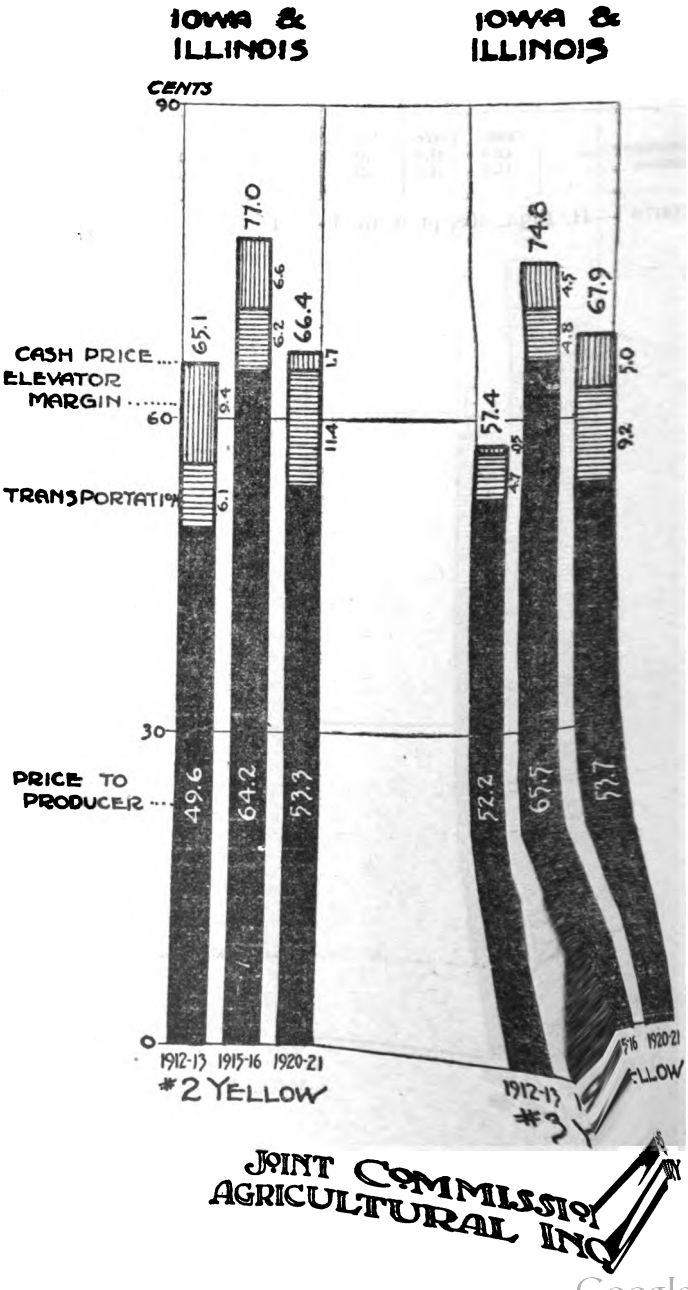
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	42.8	47.6	38.6	Elevator margin	3.2	14.8	5.5
Transportation	11.7	11.7	21.0	Terminal price	57.7	74.1	65.1

70678°—H. Rept. 408, pt. 4, 67–1——4

Digitized by Google

Chart A 10.

CORN
TO ST. LOUIS, MO.
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

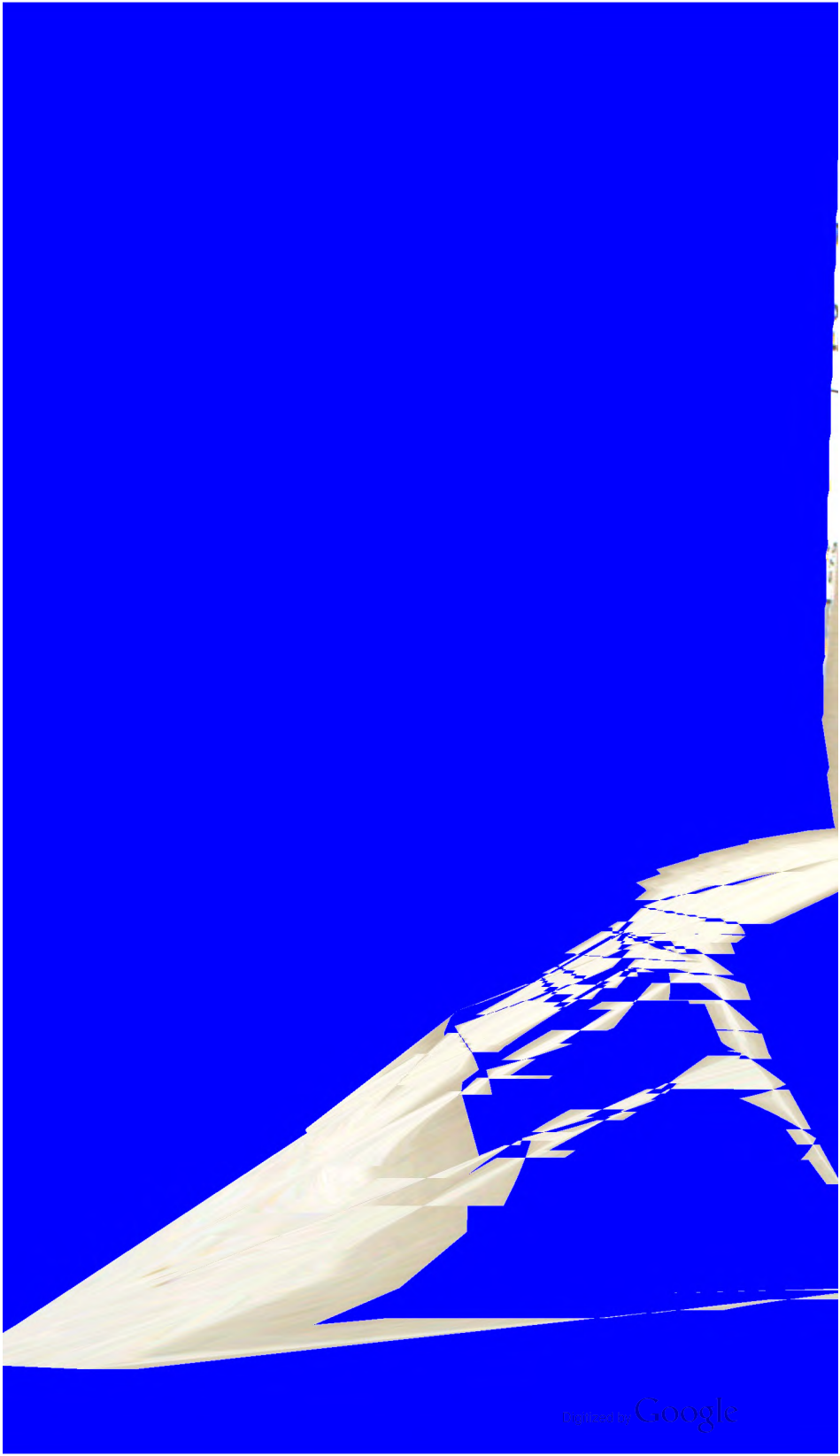
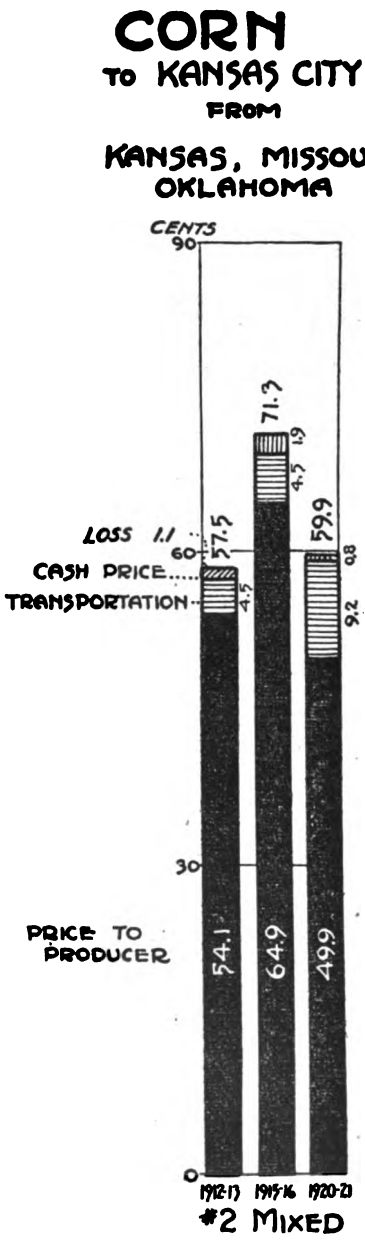

Digitized by Google

Chart A 11.



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A19.—No. 2 MIXED CORN AT KANSAS CITY, MO., FROM 10 TYPICAL POINTS IN KANSAS, MISSOURI, AND OKLAHOMA.

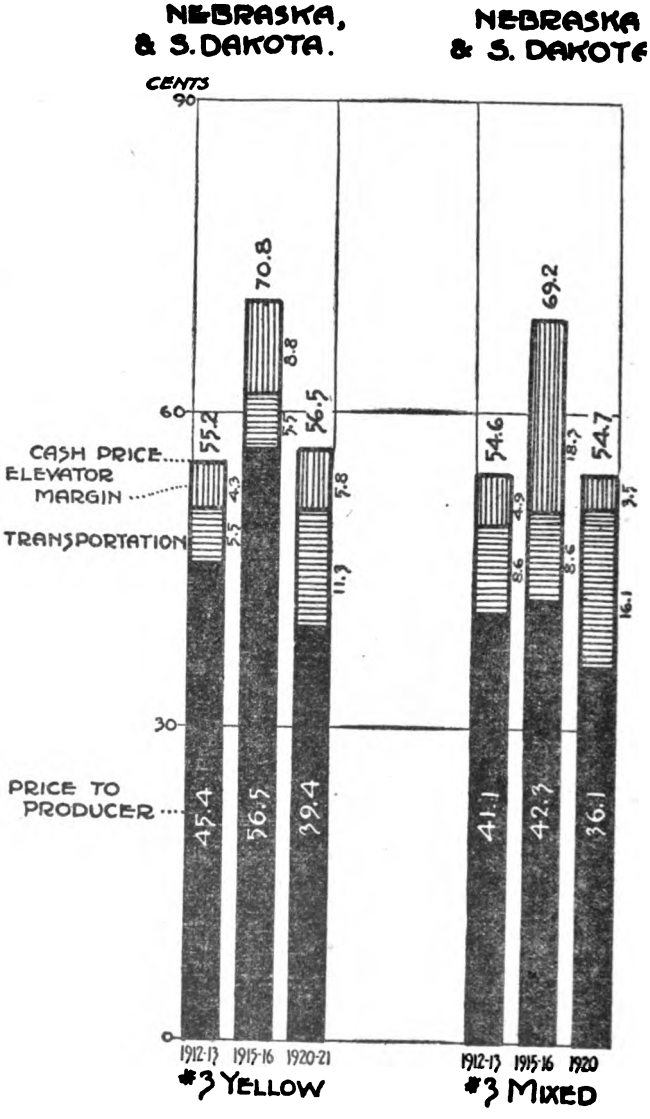
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	54.1	64.9	49.9	Elevator margin	[1] 1.1	1.9	0.8
Transportation	4.5	4.5	9.2	Terminal price	57.5	71.3	59.9

[1] Loss.

Digitized by Google

Chart A 12.

CORN
TO OMAHA, NEB.
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A20.—No. 3 YELLOW CORN AT OMAHA, FROM 10 TYPICAL POINTS IN NEBRASKA AND SOUTH DAKOTA.

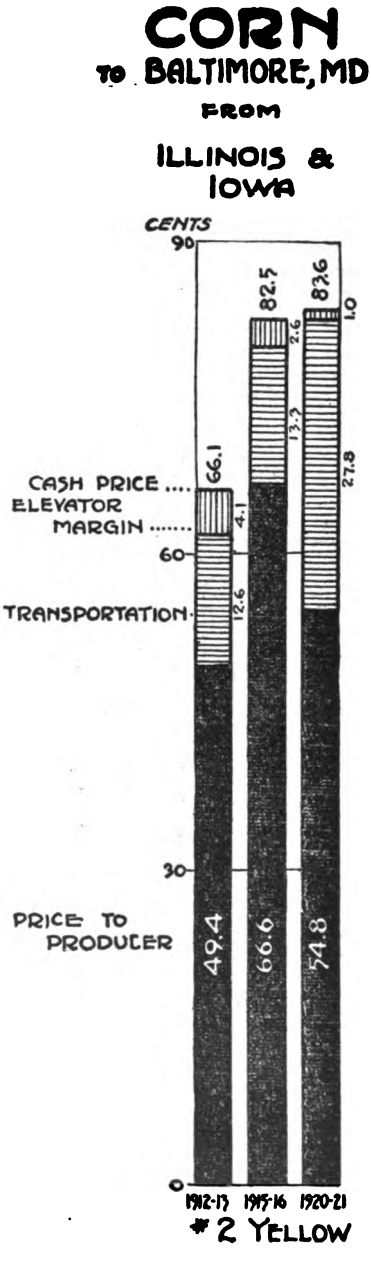
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	45.4	56.5	39.4	Elevator margin	4.3	8.8	5.8
Transportation	5.5	5.5	11.3	Terminal price	55.2	70.8	56.5

TABLE A21.—NO. 3 MIXED CORN AT OMAHA FROM SEVEN TYPICAL POINTS IN NEBRASKA AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	41.1	42.3	36.1	Elevator margin	4.9	18.3	3.5
Transportation	8.6	8.6	15.1	Terminal price	54.6	69.2	54.7

Digitized by Google

Chart A 13.



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

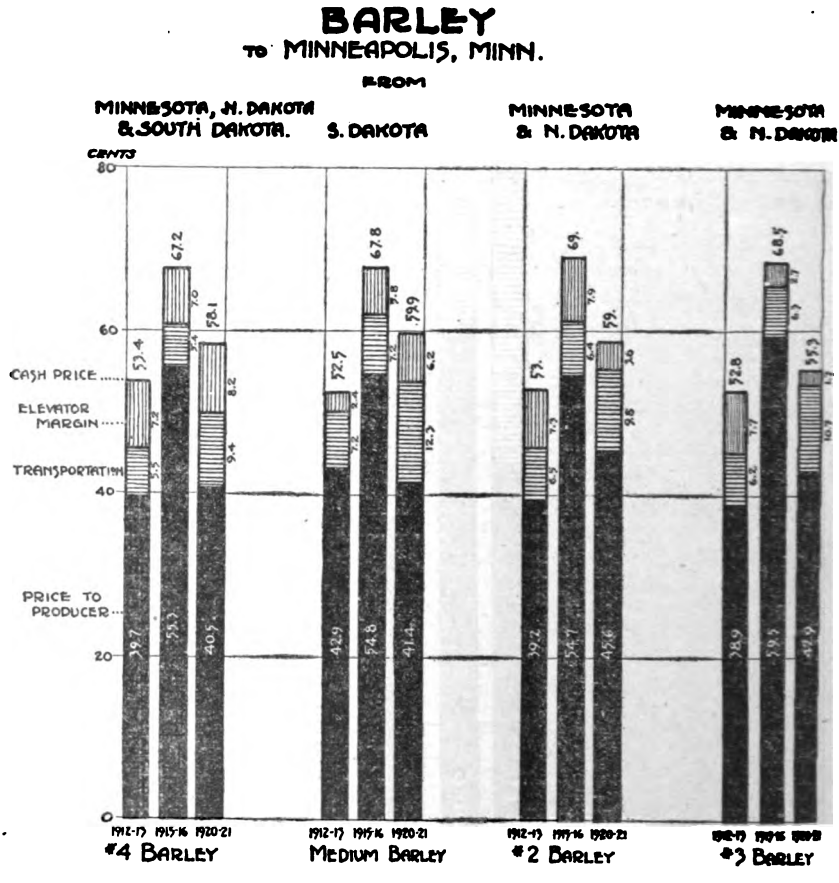
TABLE A22.—NO. 2 YELLOW CORN AT BALTIMORE FROM SIX TYPICAL POINTS IN ILLINOIS AND IOWA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	49.4	66.6	54.8	Elevator margin	4.1	2.6	1.0
Transportation	12.6	13.3	27.8	Terminal price	66.1	82.5	83.6

Digitized by Google

The following charts, A14 to A17, on pages 48 to 54, and Tables A23 to A31, on pages 49 to 55, show the price received by the producer for barley in the local market, the amount of freight to destination, the margin taken by the local and terminal elevators, and the cash price at terminal markets:

Chart A 14.



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A23.—NO. 4 BARLEY AT MINNEAPOLIS FROM 28 TYPICAL POINTS IN MINNESOTA AND NORTH AND SOUTH DAKOTA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	39.7	55.3	40.5	Elevator margin	7.2	7.0	8.2
Transportation	5.5	5.4	9.4	Terminal price	52.4	67.7	58.1

TABLE A24.—MEDIUM BARLEY AT MINNEAPOLIS, FROM 12 TYPICAL POINTS IN SOUTH DAKOTA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	42.9	54.8	41.4	Elevator margin	2.4	5.8	6.2
Transportation	7.2	7.2	12.3	Terminal price	52.5	67.8	59.9

TABLE A25.—NO. 2 BARLEY AT MINNEAPOLIS, FROM 4 TYPICAL POINTS IN MINNESOTA AND NORTH DAKOTA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	39.2	54.7	45.6	Elevator margin	7.3	7.9	3.6
Transportation	6.5	6.4	9.8	Terminal price	53.0	69.0	59.0

TABLE A26.—NO. 3 BARLEY AT MINNEAPOLIS, FROM 5 TYPICAL POINTS IN MINNESOTA AND SOUTH DAKOTA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	38.9	59.5	42.9	Elevator margin	7.7	2.7	1.7
Transportation	6.2	6.3	10.7	Terminal price	52.8	68.5	55.3

Digitized by Google

Chart A 15.

BARLEY
TO MILWAUKEE, WIS.
FROM

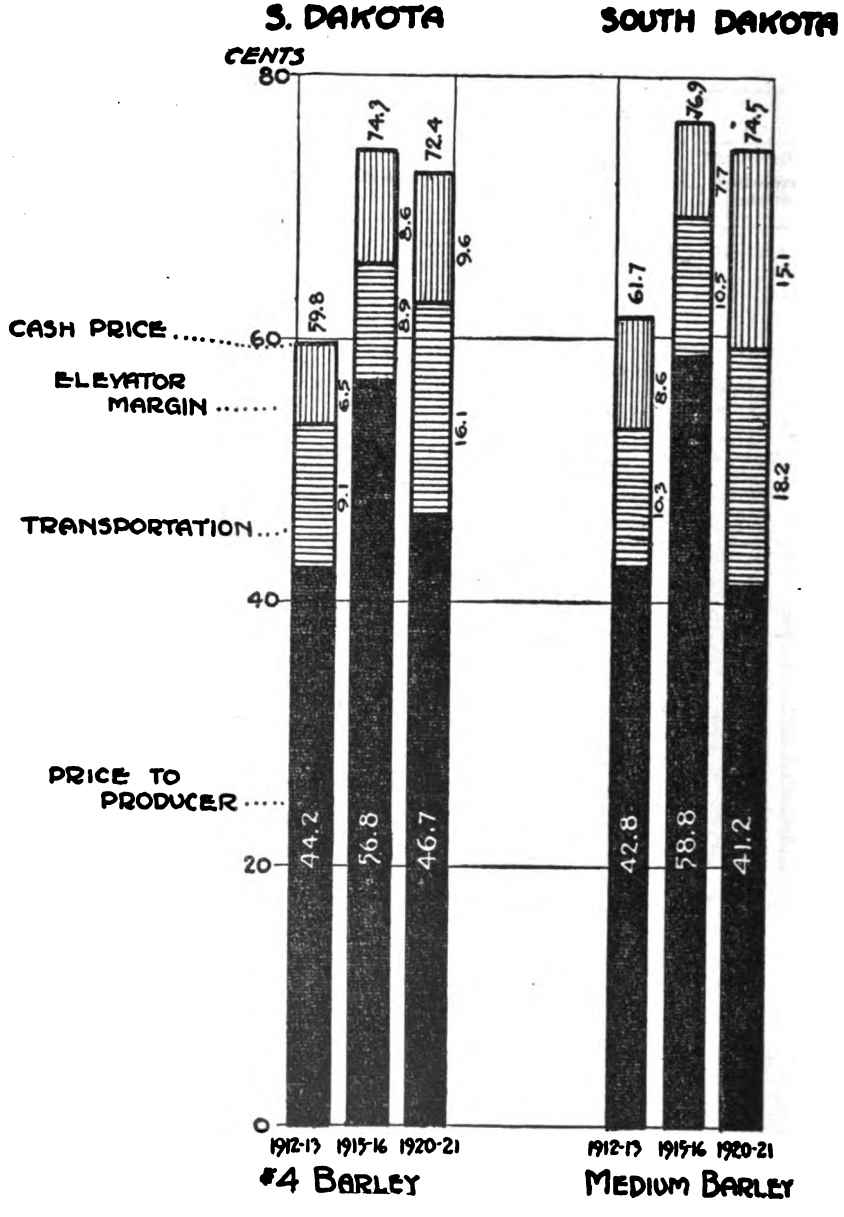


TABLE A37—NO. 4 BARLEY AT MILWAUKEE, FROM 9 TYPICAL POINTS IN MINNESOTA AND SOUTH DAKOTA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	Cents.	Cents.		Cents.	Cents.	Cents.
Price to producer	44.2	38.5	46.7	Elevator margin	6.3	5.6	9.6
Transportation	9.1	5.9	16.1	Terminal price	39.4	74.3	72.4

TABLE A38—MEDIUM BARLEY AT MILWAUKEE, FROM 12 TYPICAL POINTS IN SOUTH DAKOTA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	Cents.	Cents.		Cents.	Cents.	Cents.
Price to producer	42.5	56.5	41.2	Elevator margin	8.6	7.6	15.1
Transportation	10.3	10.5	14.2	Terminal price	61.7	76.9	74.5

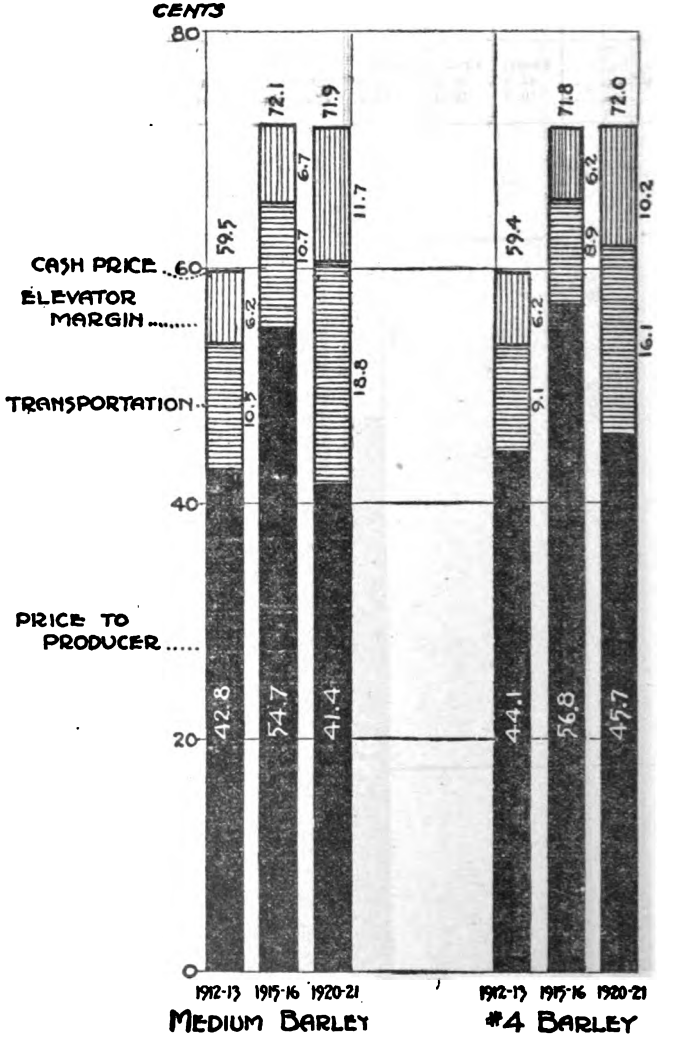
Digitized by Google

Chart A 16.

BARLEY
TO CHICAGO, ILL.
FROM

SOUTH DAKOTA

MINNESOTA & SOUTH DAKOTA



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A29.—MEDIUM BARLEY AT CHICAGO, FROM 12 TYPICAL POINTS IN SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	42.8	54.7	41.4	Elevator margin	6.2	6.7	11.7
Transportation	10.5	10.7	18.8	Terminal price	59.5	72.1	71.9

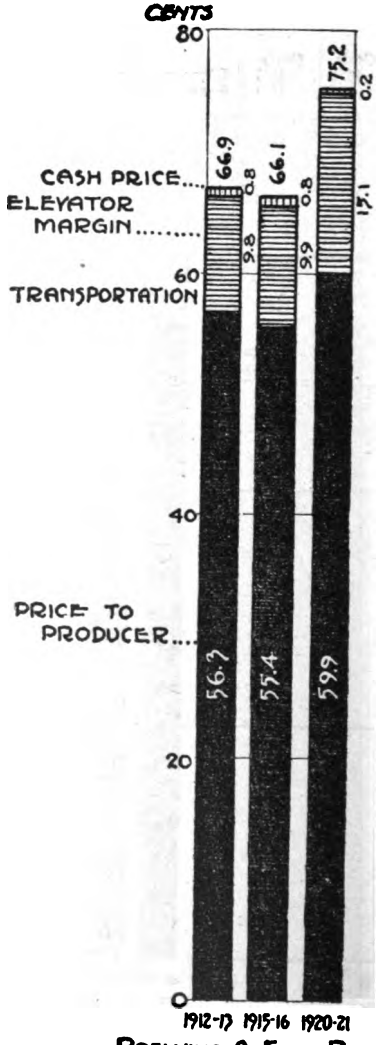
TABLE A30.—NO. 4 BARLEY AT CHICAGO, FROM 9 TYPICAL POINTS IN MINNESOTA AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents*		*Cents.*	*Cents.*	*Cents.*
Price to producer	44.1	56.8	45.7	Elevator margin	6.2	6.1	10.2
Transportation	9.1	8.9	16.1	Terminal price	59.4	71.8	72.0

Digitized by Google

Chart A 17.

BARLEY
TO SAN FRANCISCO
FROM
CALIFORNIA



BREWING & FEED BARLEY

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A31.—BREWING AND FEED BARLEY AT SAN FRANCISCO, FROM 5 TYPICAL POINTS IN CALIFORNIA.

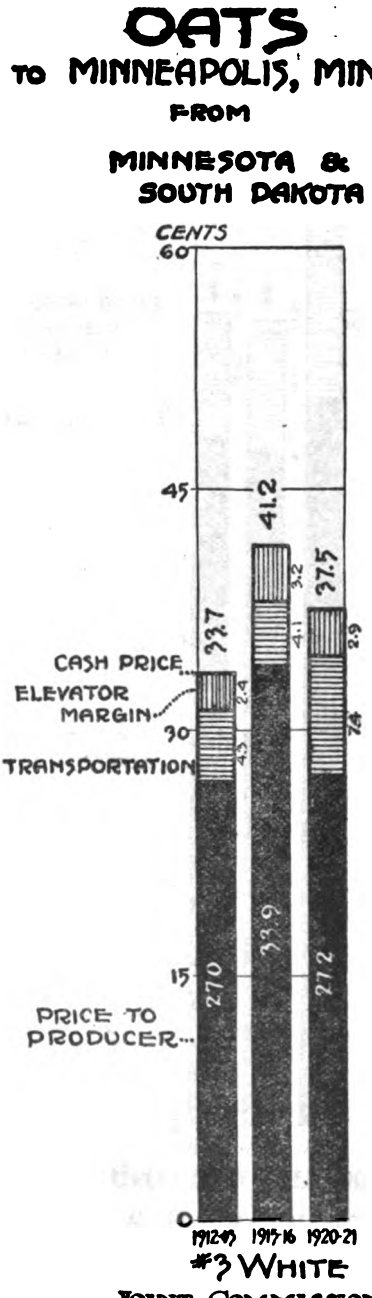
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	56.3	55.4	59.9	Elevator margin	0.8	0.8	0.2
Transportation	9.8	9.9	15.1	Terminal price	66.9	66.1	75.2

70678°—H. Rept. 408, pt. 4, 67–1——5

Digitized by Google

The following charts A18 to A23 on pages 56 to 66 and Tables A32 to A39 on pages 57 to 67 show the price received by the producer for oats in the local market, the amount of freight to destination, the margin taken by the local and terminal elevators, and the cash price at terminal market.

Chart A 18.



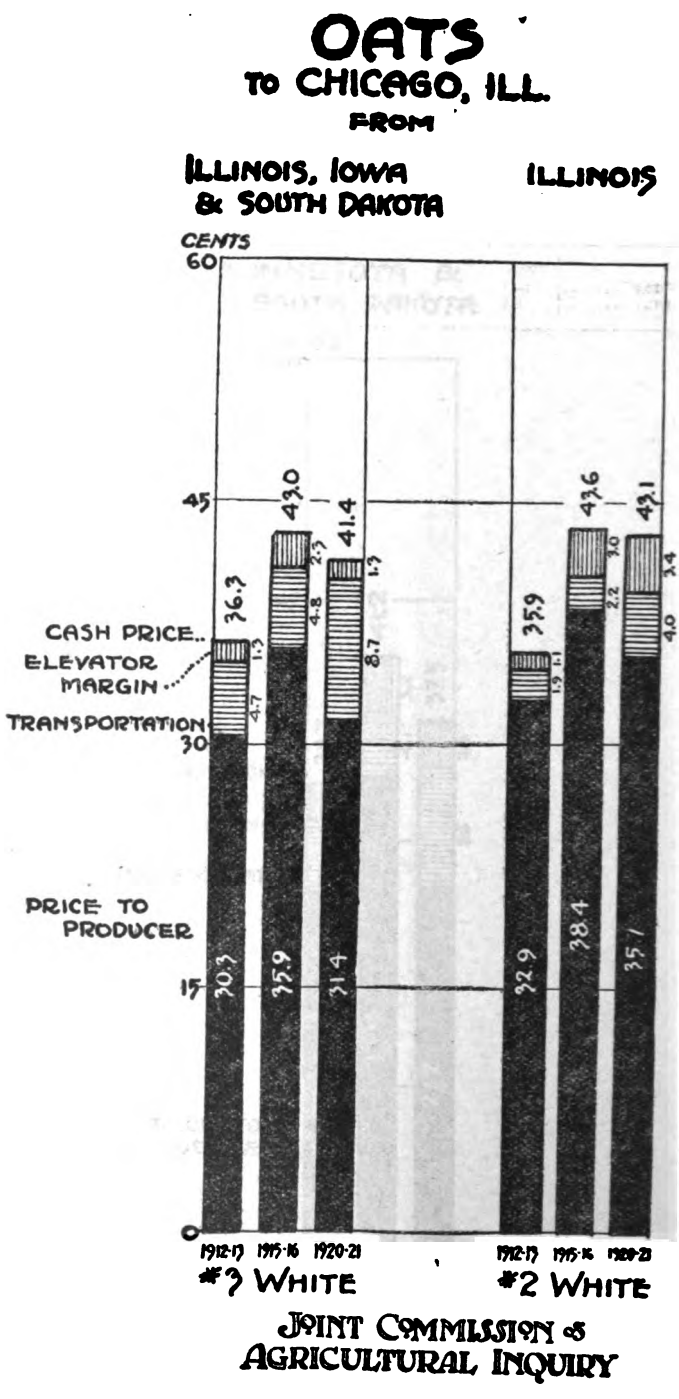
Digitized by Google

TABLE A32.—No. 3 WHITE OATS AT MINNEAPOLIS, FROM 18 TYPICAL POINTS IN MINNESOTA AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	27.0	33.9	27.2	Elevator margin	2.4	3.2	2.9
Transportation	4.3	4.1	7.4	Terminal price	33.7	41.2	37.5

Digitized by Google

Chart A 19.



Digitized by Google

TABLE A33.—No. 3 WHITE OATS AT CHICAGO, FROM 20 TYPICAL POINTS IN ILLINOIS IOWA, AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	30.3	35.9	31.4	Elevator margin	1.3	2.3	1.3
Transportation	4.7	4.8	8.7	Terminal price	36.3	43.0	41.4

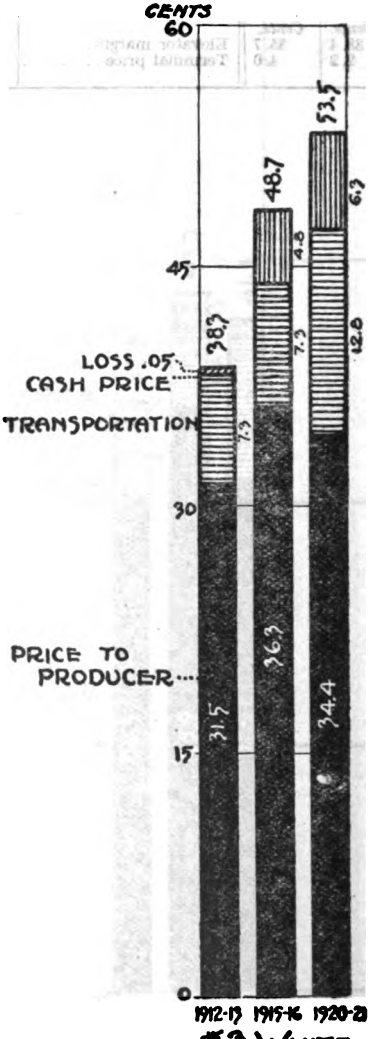
TABLE A34.—No. 2 WHITE OATS AT CHICAGO, FROM 5 TYPICAL POINTS IN ILLINOIS.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	32.9	38.4	35.7	Elevator margin	1.1	3.0	3.4
Transportation	1.9	2.2	4.0	Terminal price	35.9	43.6	43.1

Digitized by Google

Chart A 20.

OATS
TO NEW YORK
FROM
IOWA, ILLINOIS & INDIANA



#3 WHITE

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A35.—No. 3 WHITE OATS AT NEW YORK, FROM 13 TYPICAL POINTS IN IOWA, ILLINOIS, AND INDIANA.

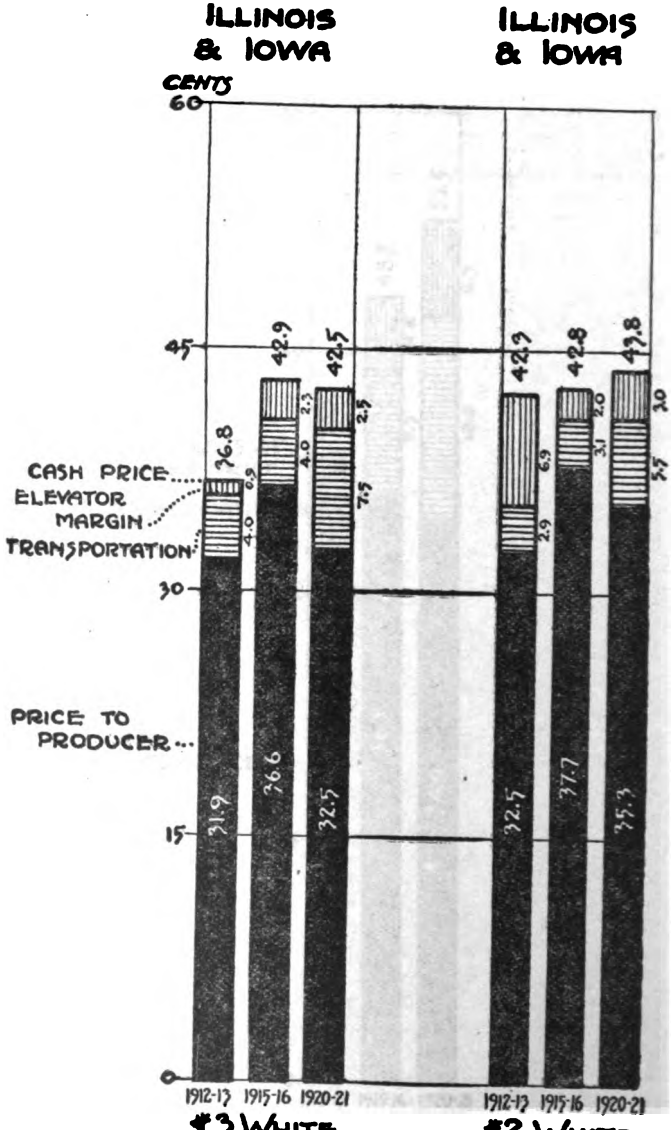
	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	31.5	26.3	34.3	Elevator margin	[1] 0.5	4.8	6.3
Transportation	7.3	7.6	12.8	Terminal price	38.3	48.7	53.5

[1] Loss.

Digitized by Google

Chart A 21.

OATS
TO ST. LOUIS, MO
FROM



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

ABLE A36.—NO. 3 WHITE OATS AT ST. LOUIS, FROM 20 TYPICAL POINTS IN ILLINOIS AND IOWA.

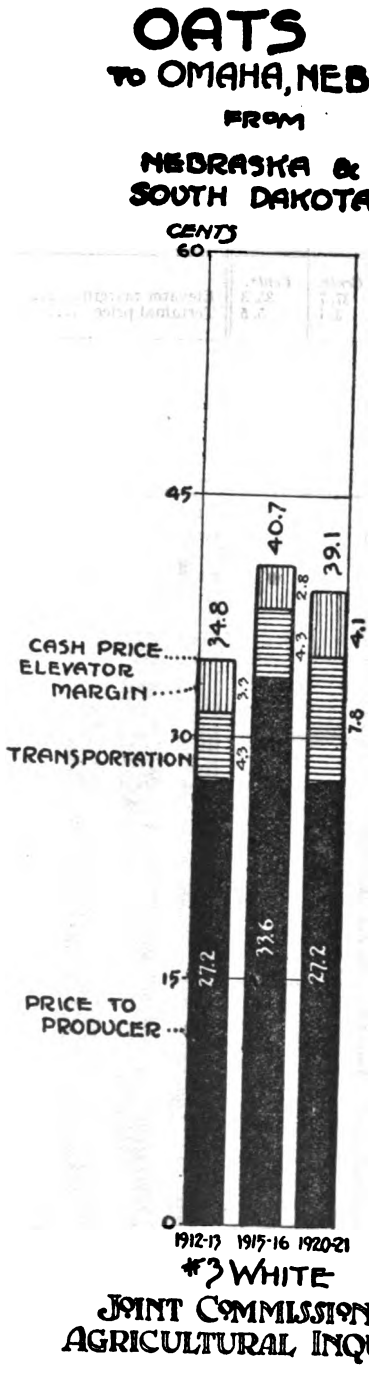
	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
rice to producer.....	31.9	36.6	32.5	Elevator margin.....	0.9	2.3	2.5
ransportation.....	4.0	4.0	7.5	Terminal price.....	36.8	42.9	42.5

ABLE A37.—NO. 2 WHITE OATS AT ST. LOUIS, FROM 12 TYPICAL POINTS IN ILLINOIS AND IOWA.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer.....	32.5	37.7	35.3	Elevator margin.....	6.9	2.0	3.0
Transportation.....	2.9	3.1	5.5	Terminal price.....	42.3	42.8	43.8

Digitized by Google

Chart A 22.



Digitized by Google

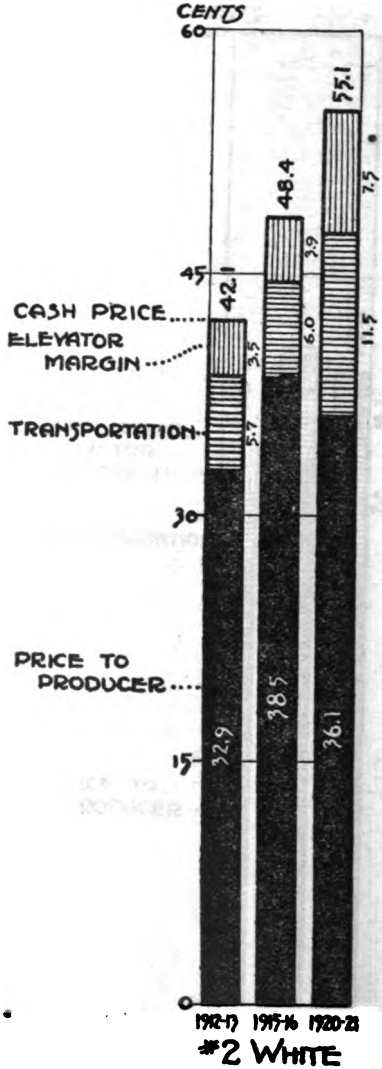
TABLE A38.—NO. 3 WHITE OATS AT OMAHA, FROM 20 TYPICAL POINTS IN NEBRASKA AND SOUTH DAKOTA.

	1912–13	1915–16	1920–21		1912–13	1915–16	1920–21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
Price to producer	27.2	33.6	27.2	Elevator margin	3.3	2.8	4.1
Transportation	4.3	4.3	7.8	Terminal price	34.8	40.7	39.1

Digitized by Google

Chart A 23.

OATS
TO NEW ORLEANS, LA
FROM
ILLINOIS



#2 WHITE

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

ABLE A39.—NO. 2 WHITE OATS AT NEW ORLEANS, FROM 4 TYPICAL POINTS IN ILLINOIS.

	1912-13	1915-16	1920-21		1912-13	1915-16	1920-21
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
rice to producer.....	32.9	38.5	36.1	Elevator margin.....	3.5	3.9	7.5
ransportation.....	5.7	6.0	11.5	Terminal price.....	42.1	48.4	55.1

About 70 per cent of the wheat and a large proportion of the coarse rains as well as of cotton are received at the terminals in the first alf of the year following the making of the crop. This fact is thought y many to afford opportunity for speculators or converters to buy he crop at a low price, hold it through storage operations, and later o sell in a higher market. The general impression prevails that rices of farm products during the last half of the crop year are gen-rally higher than in the first half, allowing for the charges for stor-ge, interest, and other costs that attach after the crop is in second ands. A number of studies have been made to determine the truth f this matter. These studies indicate rather conclusively that over period of years under the existing system of grain marketing the armer who has sold his crop soon after harvest has come off quite as ell as the farmer who has held his grain and sold in the last half of he year. However, it seems certain that more orderly marketing f farm crops—that is, a more even flow of such crops from the farm n response to market demands throughout the year—would tend to educe market-price fluctuations, afford less opportunity for specu-ative operations, and reflect back to the producer a more even and a somewhat higher price.

Digitized by Google

Chapter III.

FRUITS AND VEGETABLES.

Diagram 3, opposite this page, indicates the detail of distrib
fruits and vegetables, showing the agencies to which the p
may offer his product in his local market and the operation o
bution through primary and terminal markets, and the funct
be performed in each instance. The diagram also shows t
tributing services that relate to the movement and hand
perishable products.

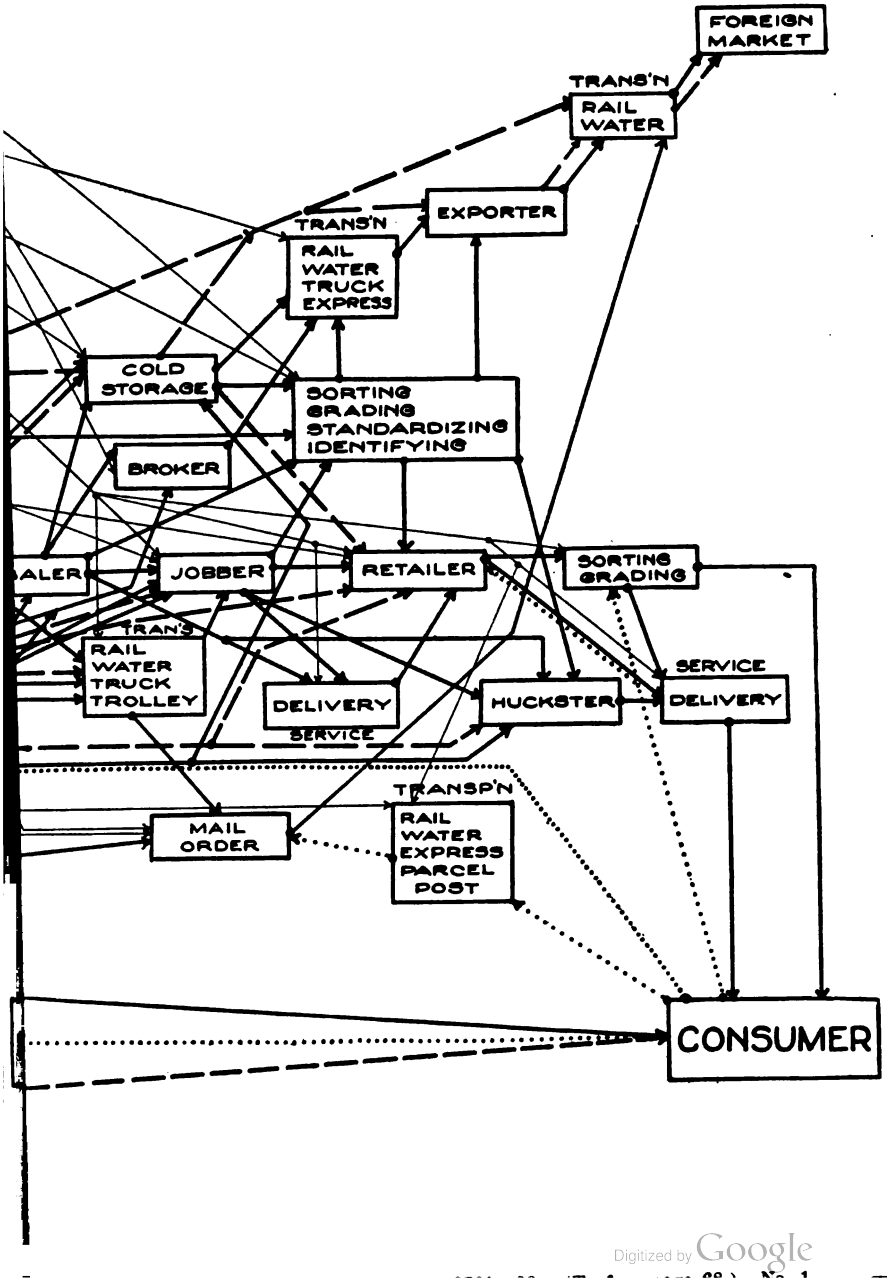
WIDE AREAS OF PRODUCTION AND DISTRIBUTION.

In studying the distribution of fresh fruits and vegetables we
first consider the wide areas over which these commodities ar
duced and distributed. People in cities now draw their majo
plies of these commodities from distant points. Areas of prod
may be hundreds and even thousands of miles from areas of dis
tion. There has been a very noticeable tendency toward the
centration of fruit and vegetable acreage in certain speci
restricted districts. In other words, fruit and vegetable growin
become a specialized business. The development by irrigati
many fertile valleys and districts in the far West and incr
production in Southern States account for much of the growth
industry. The prevailing movement of these commodities is
the West to the East and from the South to the North.

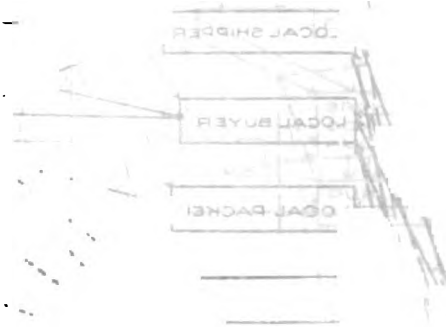
Chart A24, opposite this page, shows the distribution of pro
of 9,476 representative cars of fruits and vegetables. See
A40, p. 69.

Digitized by Google

.ES



Digitized by Google



Digitized by Google

.E

OSS

LLAN
KLING

SPORTI

PRICE T
SHIPPI

Digitized by Google

Digitized by Google

TABLE A40.—*Summary of 9,476 cars of representative fruits and vegetables sold at wholesale in the cities of Boston, Chicago, New York, Philadelphia, Pittsburgh, and other cities during the period September, 1920, and July, 1921.*

	Cars.	Total sales.		Transportation.		Shipper received.		Miscellaneous handling costs.		Receiving distributors' gross profit.	
		Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Barrel apples	2,022	$1,668,822.88	100	$193,091.39	12.00	$1,284,581.83	79.88	$98,196.73	6.11	$92,682.93	2.03
Box apples	1,466	2,832,243.03	100	1,022,288.12	36.29	1,542,240.83	54.64	197,220.32	6.99	60,284.76	2.14
Bulk apples	18	8,576.04	100	2,402.87	28.02	5,590.68	65.18	85.10	1.00	497.39	5.80
Asparagus		11,264.00	100	3,127.60	27.77	6,986.35	62.02	248.98	2.21	901.12	8.00
Do	6	9,409.63	100	1,638.79	17.41	6,851.50	72.81	166.87	1.80	752.77	8.00
Northern cabbage	331	78,101.93	100	31,940.11	40.90	35,436.54	45.37	9,247.76	11.97	1,377.53	1.76
Southern cabbage	60	30,282.33	100	20,089.33	66.35	9,226.25	30.46	507.73	1.67	458.97	1.52
California cabbage	20	11,715.34	100	8,294.39	70.80	3,021.09	42.85	450.65	3.84	−2,050.59	−17.50
Texas cabbage	65	41,413.03	100	31,111.78	75.12	8,184.10	12.32	4,084.02	9.72	1,093.13	2.64
California cantaloupe	431	489,152.45	100	203,781.82	41.66	202,960.79	41.50	47,073.31	9.62	35,336.03	7.22
Florida citrus	204	346,556.95	100	92,241.32	26.65	236,287.12	68.18	2,705.60	.79	15,201.91	4.38
California cauliflower	90	82,179.02	100	47,652.83	57.98	27,444.70	33.40	1,585.37	1.93	5,494.82	6.69
Florida and California celery	147	137,601.15	100	69,848.10	50.76	56,924.94	41.37	1,927.35	1.40	8,899.86	6.47
Northern grapes	83	143,944.14	100	17,851.42	12.40	118,047.60	82.01	2,027.41	1.40	6,037.71	4.19
California grapes	140	326,582.80	100	91,810.41	28.11	213,544.86	65.39	4,895.76	1.50	16,329.07	5.00
California lettuce	617	705,144.62	100	332,507.44	47.15	314,290.27	44.57	21,321.23	3.03	37,015.69	5.25
Lettuce	6	4,378.60	100	2,426.35	55.46	1,512.37	34.54			437.88	10.00
Miscellaneous vegetables	58	38,170.51	100	16,762.68	43.92	17,273.12	45.26	1,030.32	2.70	3,104.39	8.13
Miscellaneous fruits	523	1,048,443.00	100	324,136.87	30.92	650,915.13	62.18			73,391.01	6.90
Northern onions	1,007	386,592.86	100	122,270.43	30.88	258,921.85	65.29	8,011.42	2.02	7,389.16	1.86
California onions	10	7,032.05	100	4,012.35	57.06	3,880.11	55.18	243.05	3.45	−1,103.46	−15.69
Texas onions	395	389,188.68	100	182,584.08	46.91	189,184.60	48.61	9,872.69	2.54	7,547.31	1.94
Maine potatoes[1]	295	211,867.29	100	74,470.43	35.15	133,547.58	62.46	5,980.90	2.80	−1,090.62	−.51
Florida potatoes	63	55,013.07	100	15,857.56	28.83	37,922.97	68.93	694.95	1.26	538.49	.98
Southern potatoes	16	11,934.89	100	4,209.49	35.28	6,926.12	58.03	27.75	.23	771.53	6.46
Northern potatoes	355	229,470.48	100	46,251.04	20.16	178,902.80	77.97	2,273.65	.99	2,943.18	1.28
Prunes	48	66,863.19	100	27,767.66	41.53	35,271.14	52.76	90.44	.14	3,723.95	5.57
Texas spinach	652	648,461.62	100	355,215.16	54.78	298,541.62	45.27	34,232.35	5.27	−34,527.51	−5.32
Strawberries	113	243,111.33	100	32,650.12	13.43	202,272.37	83.20	3,133.27	1.29	5,046.76	2.08
Sweet potatoes	56	62,623.22	100	10,406.23	16.62	45,052.62	76.78	2,381.80	3.81	1,780.58	2.84
Tomatoes	104	208,837.12	100	41,540.47	19.89	121,583.02	58.22	2,480.53	1.19	43,268.10	20.70
Watermelons	75	39,841.47	100	17,886.59	44.90	22,708.80	56.99	35.00	.62	−778.92	−1.95
Total	9,476	10,514,508.72	100	3,448,339.23	32.79	6,271,135.36	59.64	462,244.20	4.39	372,430.93	3.54

[1] This does not include $4,732.89 claims not paid in expense account.

Digitized by Google

LONG-HAUL MOVEMENT.

Over 50 per cent of the commercial fruits and vegetables shipped in this country originate in the territory west of the Mississippi River. To a very great extent this production is consumed in the eastern territory. It was found that on 9,476 representative cars of fruits and vegetables the average haul was about 1,400 miles. Shipments of these commodities probably represent a longer haul movement, on the whole, than any other important line of commodities.

DIFFERENCE IN SEASONS.

The difference in seasons is an important consideration in connection with the distribution of fruits and vegetables. During the late winter months when the northern-grown supplies are being exhausted, new crops are being harvested in the South, Southwest, and on the Pacific coast. These must be carried northward and eastward so that there may be an uninterrupted supply of orchard and garden products.

NO OVERLAPPING OF STOCKS.

Fresh fruits and vegetables are seasonal commodities. They can not be held beyond their normal storage season. There is no overlapping of stocks from one year to another. They bear their own limitations and must be sold while in prime condition or loss from deterioration ensues. Some fruits and vegetables must be marketed immediately following harvest; others, like potatoes, apples, northern onions, and cabbage, have a several months' storage period covering the time of nonproduction. Generally speaking, the perishable nature of these commodities sets them apart from most other farm crops and their distribution presents certain peculiar and complex problems.

FACTORS INFLUENCING PRICE TO PRODUCER.

Two fundamentally different principles govern the price to the producer: First, the law of supply and demand, and, second, the principle of fixed charges. The sale price of fruits and vegetables is determined by the relation of supply and demand, rather than by cost of production. The growers' returns are largely determined by the wholesale price, which is a fluctuating factor.

Out of the fluctuating wholesale price there are certain fixed charges in distribution, such as freight, storage, cartage, interest, insurance, and the semifixed charge of labor, all of which must be paid before the producer gets anything or before the wholesale distributor can be paid for his services, or gets his money back on goods purchased. Changes in cost of distribution up to the time goods are sold at wholesale are largely reflected in the producer's net return. For example, increased transportation charges, in the first instance, at least, are largely borne by producers, since production of fruits and vegetables, particularly tree fruits, can not be quickly regulated to meet new conditions. Once produced, the crop will probably be sent to market even if the returns will yield only a little more than the costs of distribution, including transportation, etc., and irrespective of cost of production.

Digitized by Google

Changes in the costs of distribution from the wholesaler to the consumer are largely reflected in the price paid by the consumer. While the price paid by the consumer may not directly affect the producer's price, it does have an effect upon demand and in this way an influence upon price to the producer.

EFFECT OF LOW PRICES.

When fruits and vegetables sell for less than cost of production, the inevitable effect, as with other crops, is a restriction of production. This effect may not be immediately felt, however, particularly with tree fruits. It requires several years for trees to come into full bearing, and overproduction as the result of excessive planting is not felt for a considerable period. After spending as many as 10 or 15 years in bringing an orchard into bearing, the owner is loath to pull out his trees and will usually wait several years in the hope that price and production will become adjusted. With vegetables, production responds more quickly to demand, and yet, when districts have once become devoted to specialized crops, the tendency is to remain in the business, even when it has become unprofitable. In the long run, curtailed production is, of course, the inevitable effect of low prices.

LOCAL MARKETS.

Fruit and vegetable growers employ three common methods in disposing of their crops:

(1) Shipping on consignment.
(2) Selling to cash buyers at point of origin.
(3) Marketing under a cooperative system.

In the neighborhood of towns or cities, growers sometimes dispose of part or even all of their crops by direct sale to the consumer. In the city of Boston, for example, there is maintained in the heart of the wholesale district a square to which, under the provisions of the old city charter, farmers living within a radius of 25 miles may bring their produce and sell directly to the consumer. Public markets of this kind are found in many other cities and towns.

The bulk of the fresh fruits and vegetables is transported to market by rail, although the movement by automobile truck is rapidly becoming an important item. After hauling his produce to the local railway station, the grower may ship in small lots or in car lots to a commission man, or he may sell for cash to a wholesale buyer. In organized districts the grower may turn his product over to a cooperative marketing association. The development of the canning, drying, and preserving industry has afforded an outlet for a certain part of the fruit and vegetable production. Factories are usually situated in regions of production so that sales are frequently made direct from producer to manufacturer.

GRADING AND PACKING.

Growers of fruits and vegetables in many cases sell their crops in the field or orchard to wholesale shippers who grade, pack, and ship the commodities to market. In nearly all commission sales, however, and in many cash sales, the grower does the packing and grading. Considering the fresh fruit and vegetable industry as a

Digitized by Google

whole the output is largely packed and graded by growers who maintain their own packing and grading establishments, or by wholesale shippers. There has developed during recent years, however, a growing tendency toward community packing. Under this system, commodities are hauled to the shipping station in the rough, just as they come from the orchard or field, and are then prepared for market in centralized packing houses situated at convenient shipping stations.

ISOLATED GROWER HANDICAPPED.

The isolated grower has not the advantages in disposing of his product that are enjoyed by the grower in a region of intense production. This is especially true of perishable products. Economical methods of handling and distributing are in a considerable measure dependent upon volume. Facilities for assembling and shipping commodities may be developed in regions of large production which would be impracticable for regions having a relatively small output. Buyers are attracted to districts where they may purchase in quantity.

PRODUCTS MUST MOVE QUICKLY.

Once produced, fruits and vegetables must either be placed in safe storage or moved speedily toward consuming markets. There must be fluid movement at all times. It is necessary in many cases for shippers to start cars rolling from producing regions to important gateways when the purchaser or ultimate destination is not known. In this manner commodities are brought more quickly into the vicinity of consuming markets and are stored in transit, diverted or reconsigned in accordance with market needs and developments. Diversion and storage-in-transit service are exceedingly important.

COOPERATIVE ASSEMBLING AND DISTRIBUTION FROM LOCAL MARKET.

Cooperative handling and marketing associations exist in many parts of the country. This method is more common in the West than in the East. Extreme distance from market and the problems of rapidly increasing production have been important influences in the development of cooperation in the West.

The community packing house, found in some districts, is a development of cooperative marketing among fruit and vegetable growers. Once graded and packed, the output of cooperative organizations is usually disposed of through the wholesale and retail channels which will be later described.

POOLING.

The practice of pooling has developed to a certain extent in cooperative marketing. Under this arrangement growers contribute to a pool in which the identity of the individual grower's product is lost and each contributor receives a pro rata share of the total return of the pool. Uniformity in the quality of the product in each pool is necessary to the successful operation of such a system; otherwise the poor product will bring down the price of the good and result in dissatisfaction among members.

IMPROVED GRADES AND STANDARDS.

A noticeable development in the fruit and vegetable industry has been the improvement of grades and standards; much improvement

Digitized by Google

can still be made. There is need for greater standardization of containers and for more uniformity in grades. No other one thing will add more stability to the industry. State and Federal authorities, acting by and with the advice and cooperation of interested parties, should establish and maintain standard grades and standard containers. The producer is most vitally concerned in the proper preparation of his product for market and his success depends in a measure upon the reputation for quality and uniformity which the product earns. Therefore, as a general rule it seems that the grower, acting either individually or cooperatively, rather than the buyer, should supervise the packing and grading of fresh fruits and vegetables.

CAR-LOT DISTRIBUTION IN RELATION TO THE LOCAL MARKET.

While the car-lot distributor is engaged in the wholesale distribution of fruits and vegetables, this agency, acting primarily on behalf of the grower, is so closely linked up with the local market as to require treatment therewith. Car-lot distribution is based on a large volume of business. It has risen to importance particularly in centers of concentrated planting where the production is unusually large. There are specialized districts in the West where thousands of cars of certain fruits and vegetables are produced from a relatively restricted area. The distribution of this enormous production must be national or even world-wide in its scope.

In many cases both private and cooperative distributing organizations finance production by advancing cash or credit to cover growing costs, packing, and harvesting. Representatives of the private car-lot distributors often superintend actual packing, growing, branding, warehousing, and assembling of the commodity in general. The charge for car-lot distribution is variable and depends upon service. It seldom exceeds 7½ per cent of the gross sales, and when this amount is charged it usually covers the cost of supervision at point of assembling, auction charges, if any, as well as the charge for the maintenance of the selling organization.

Digitized by Google

CHAPTER IV.

WOOL.

Diagram 4, opposite this page, shows the detail of distribution wool and wool products. In another section of this part of t report will be found statements relating to the conversion of woo cloth into men's suits and the distribution through retail channels.

COTTON.

Diagram 5, opposite this page, shows the detail of distribution cotton and cotton products. In another chapter of this report w be found the distribution of certain cotton products.

DAIRY PRODUCTS.

While a great many surveys have been made relative to the pr duction and distribution of milk, by States and municipalities, a in some cases in cooperation with producers and distributors the were not sufficient correlated data to serve the purpose of this inquir The commission endeavored to correlate the result of all previo surveys and to secure original data from every logical source. Th in itself involved an immense study, but the industry is so localiz as to production and distribution, that it could not be sufficient reflected on a national basis. Part 1 of the commission's repo contains comprehensive figures relative to dairy production, co sumption, and investment. Diagram 6, opposite this page, shows t detail of distribution of dairy products.

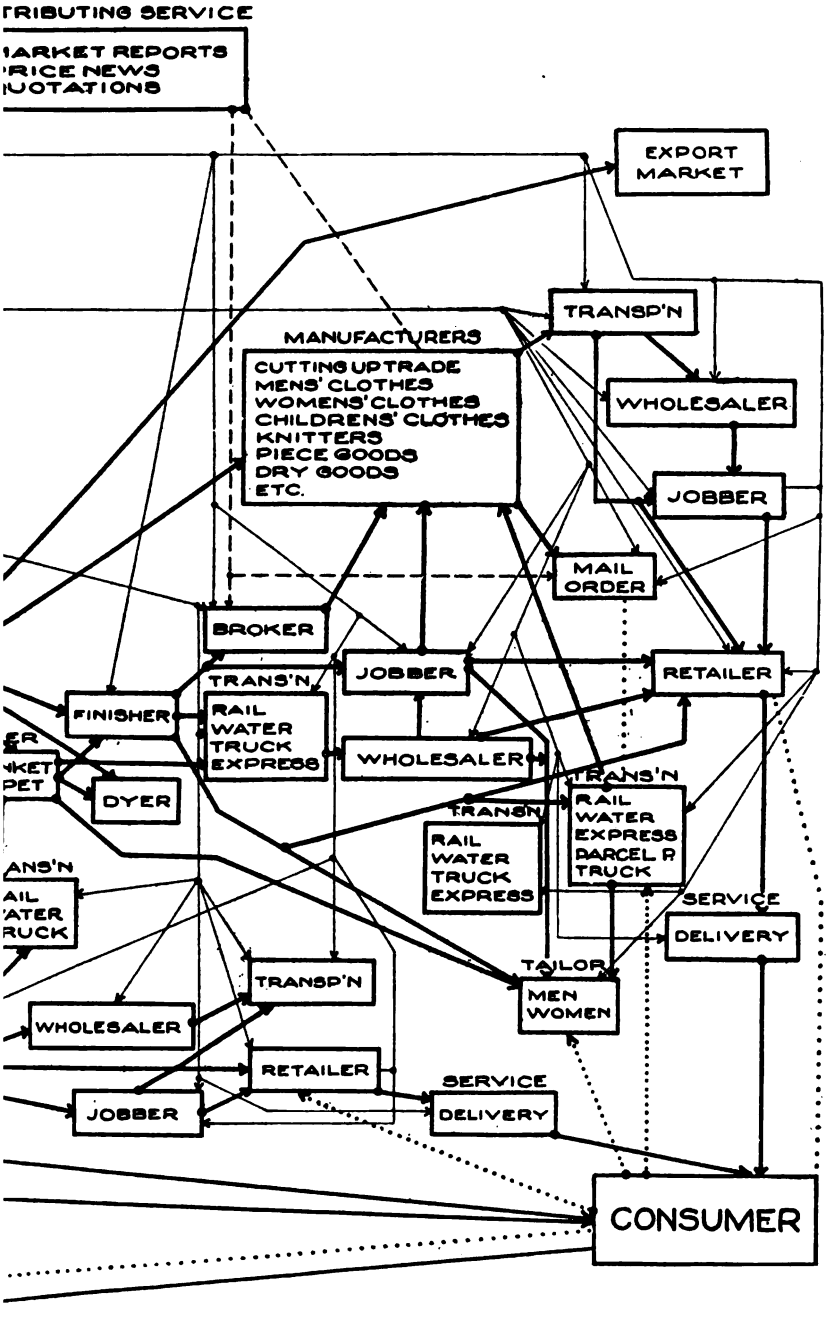
LIVE STOCK

Diagram 7, opposite this page, shows the detail of distribution of li stock and live-stock products and by-products, showing the agenci to which the producer may offer his live stock in his local market a the operation of distribution to the terminal markets and the fun tions to be performed in each instance. The diagram also sho the contributing services which relate to the movement and handlin of live stock and the distribution of live-stock products and b products. In other chapters of this report will be found the conve sion and distribution of beef.

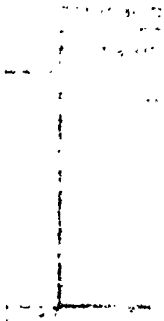
The production of live stock is generally centered in the Midd West and the ranges. The general movement of live stock from o phase of production to another and through the processes of prep ration for food is from West to East. Montana, Idaho, Wyo ming, Utah, Colorado, Arizona, Nevada, New Mexico, and Tex are the so-called "range States" where live stock is raised o pasture. Eastern Kansas, eastern Nebraska, Iowa, Illinois, Indian

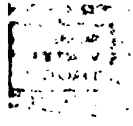
Digitized by Google

CTS



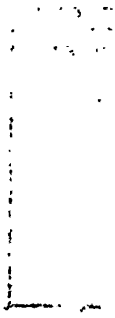
Digitized by Google





Digitized by Google

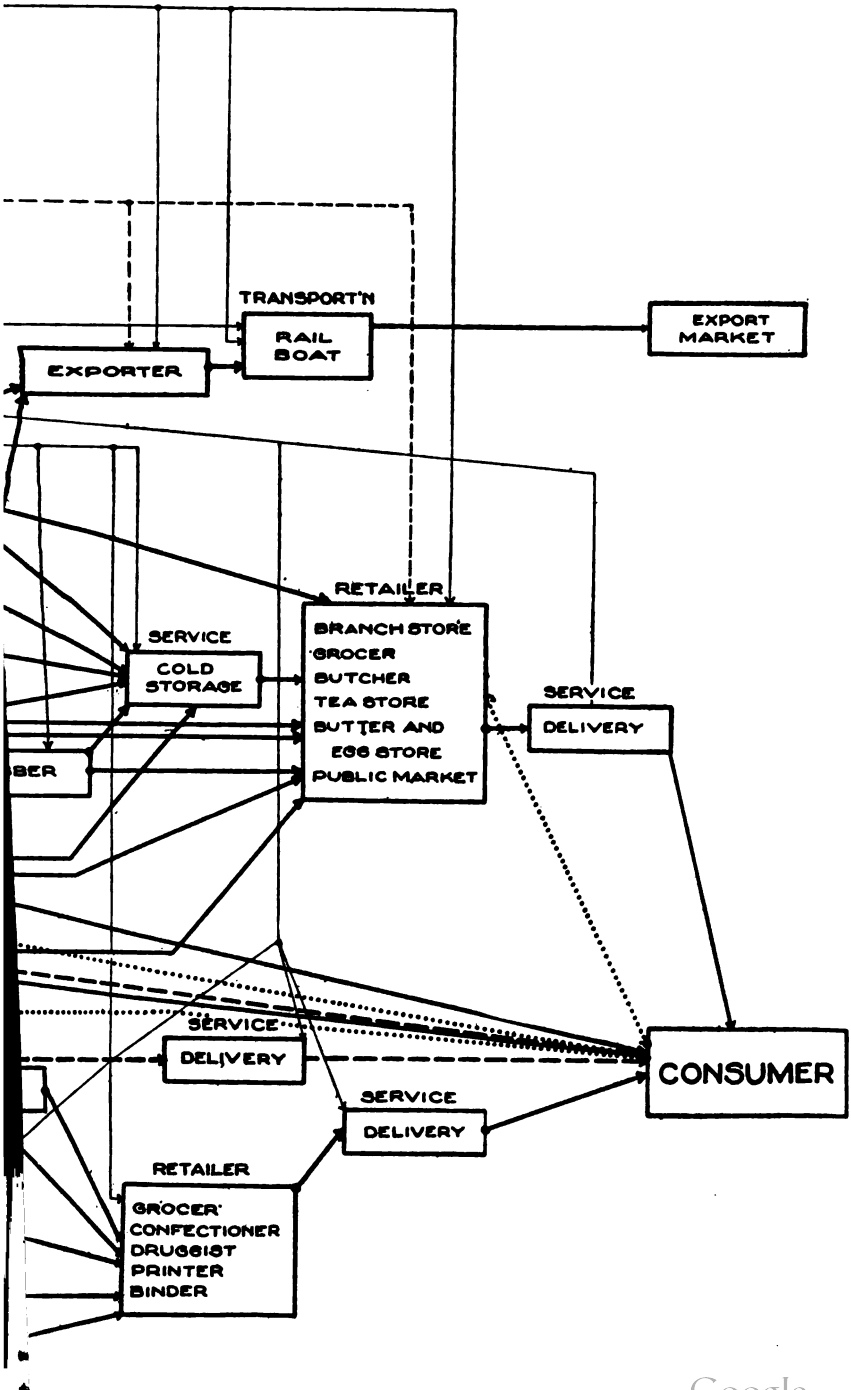
Digitized by Google



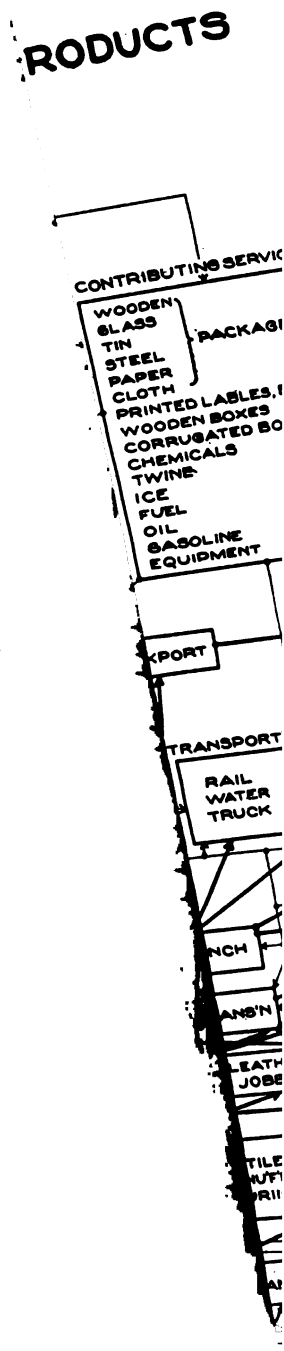
Digitized by Google

Digitized by Google

Digitized by Google



Digitized by Google



Digitized by Google

JCTS

Digitized by Google

Digitized by Google

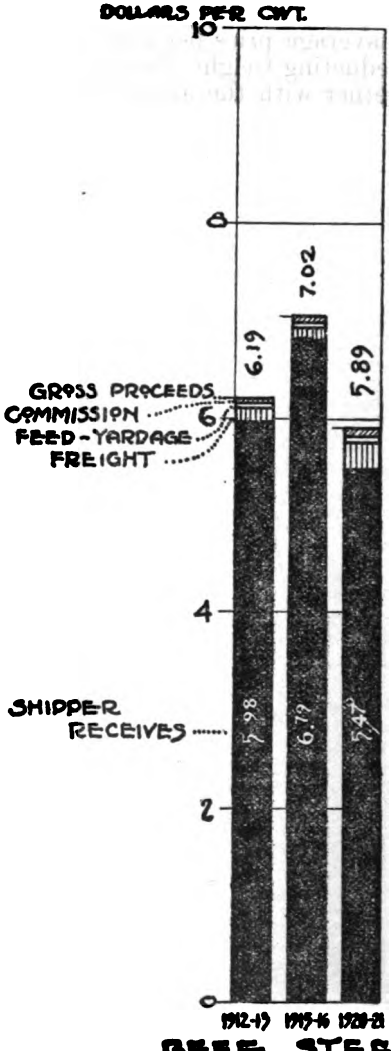
and Ohio approximate the Corn Belt States, in which cattle are raised upon the farms or fed and fattened for market. The stock fed and fattened in the Corn Belt States is generally shipped in from the range State to primary or terminal market, where it is bought by the finishing feeder for preparation for the packer market. Kentucky, West Virginia, Virginia, and Tennessee are the Blue Grass States, in which cattle are carried from breeding stock to finished beef. Practically all States produce more or less live stock, but the foregoing statement represents the territory from which the bulk of live stock comes.

Charts A25 to A35, on pages 76 to 96, and tables A41 to A51, on pages 77 to 97, show the average price per hundred pounds received by the producer after deducting freight, feed, yardage charges, and commission charges, together with the amount and the distribution of those charges.

Digitized by Google

Chart A 25.

LIVE STOCK
TO FT. WORTH, TEX.
FROM
TEXAS



BEEF STEERS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

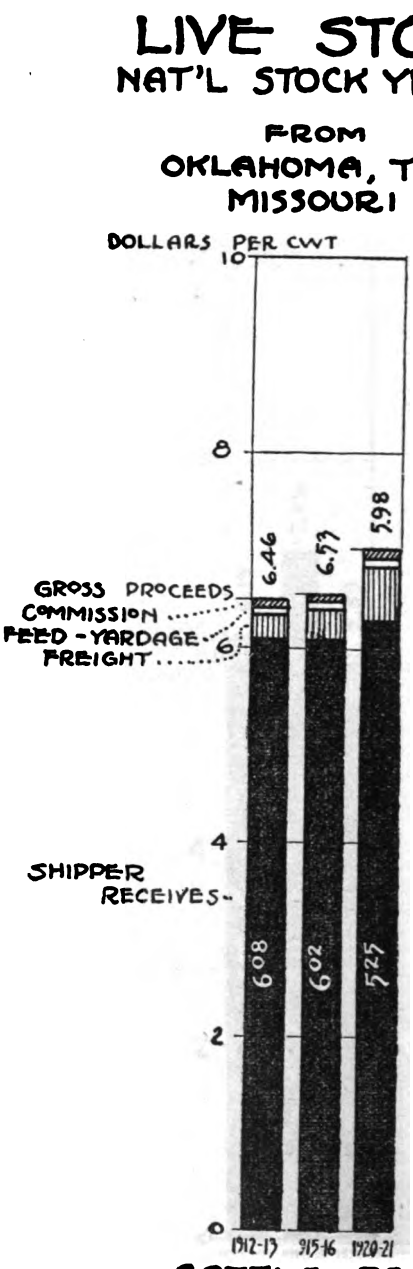
Digitized by Google

ABLE A41.—*Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to Fort Worth, Tex.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
12–13	$6.19	$0.05	$0.03	$0.13	$5.98
15–16	7.02	.05	.03	.15	6.78
20–21	5.89	.07	.06	.29	5.47

Digitized by Google

Chart A 26.



Digitized by Google

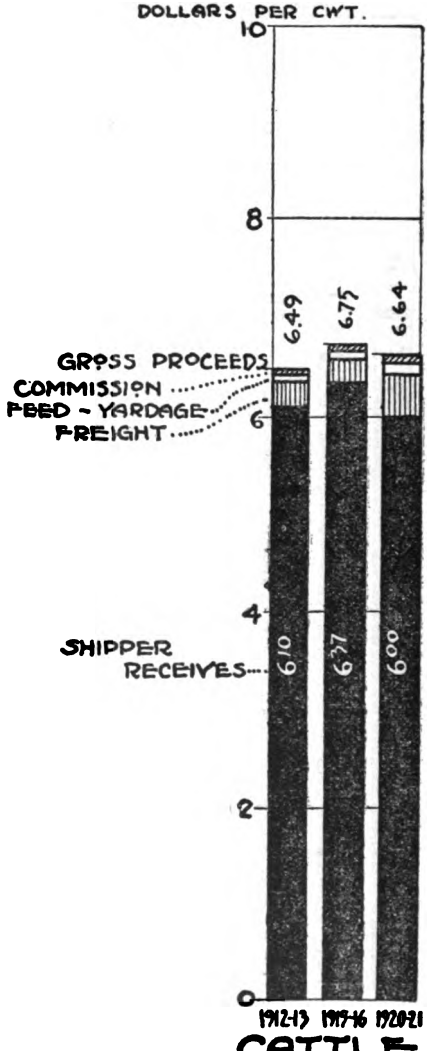
BLE A42.—*Average price per hundred pounds of beef cattle received by the producer ter deducting freight, feed, yardage, and commission charges to National Stock Yards, ll.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
-13	$6.46	$0.06	$0.04	$0.27	$6.08
-16	6.53	.07	.05	.38	6.02
-21	5.98	.09	.10	.54	5.25

Digitized by Google

Chart A 27.

LIVE STOCK TO DENVER, COL. FROM COLORADO



CATTLE

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

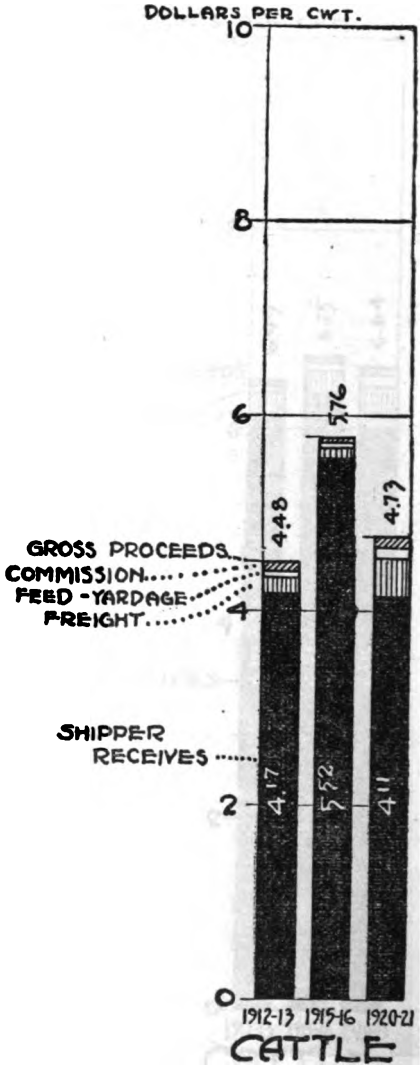
.E A43.—*Average price per hundred pounds of all cattle received by the producer after deducting freight, feed, yardage, and commission charges to Denver, Colo.*

	Gross per hundred-weight.	Commis-sion.	Feed and yardage.	Freight.	Shipper receives.
13	$6.49	$0.05	$0.05	$0.28	$6.10
16	6.75	.06	.07	.24	6.37
21	6.64	.09	.10	.44	6.00

Digitized by Google

Chart A 28.

LIVE STOCK
TO KANSAS CITY, MO.
FROM
ARKANSAS



JOINT COMMISSION OF AGRICULTURAL INQUIRY.

Digitized by Google

TABLE A44.—*Average price per hundred pounds of all cattle received by the producer after deducting freight, feed, yardage, and commission charges to Kansas City, Mo.*

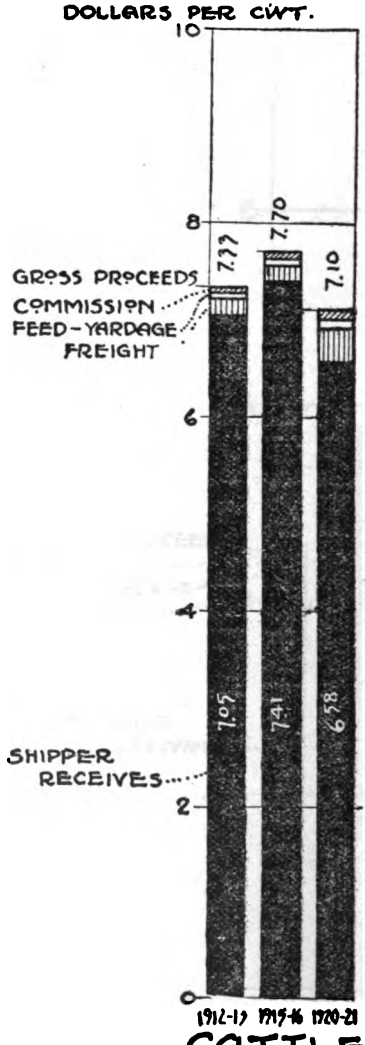
	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
12–13	$4.48	$0.07	$0.06	$0.18	$4.17
15–16	5.76	.06	.06	.12	5.52
20–21	4.73	.11	.12	.39	4.11

Digitized by Google

Chart A 29.

LIVE STOCK TO CHICAGO, ILL.

FROM MINN. - IOWA - ILLINOIS



CATTLE

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

A45.—*Average price per hundred pounds of all cattle received by the producer after deducting freight, feed, yardage, and commission charges to Chicago, Ill.*

	Gross per hundred-weight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
[illegible]	$7.33	$0.05	$0.06	$0.17	$7.05
[illegible]	7.70	.05	.05	.19	7.41
[illegible]	7.10	.09	.08	.35	6.58

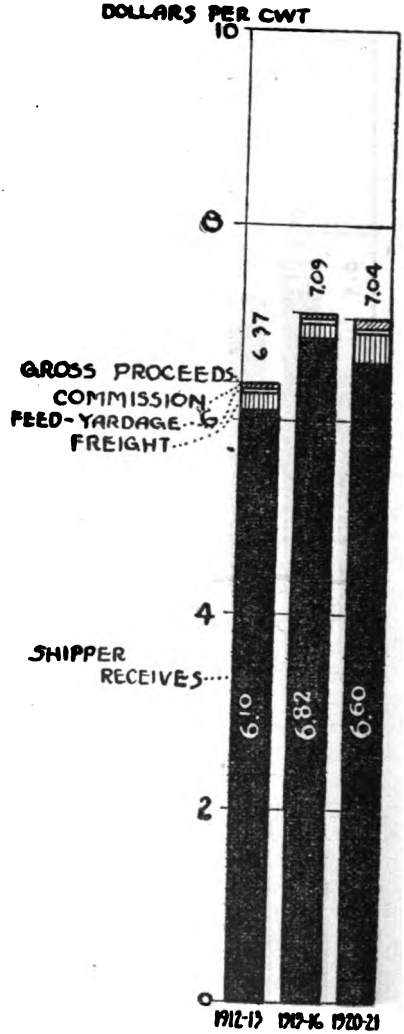
Digitized by Google

Chart A 30.

LIVE STOCK TO SIOUX CITY, IA.

FROM

NORTH AND SOUTH DAKOTA, MINNESOTA



BEEF STEERS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

ABLE A46.—*Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to Sioux City, Iowa.*

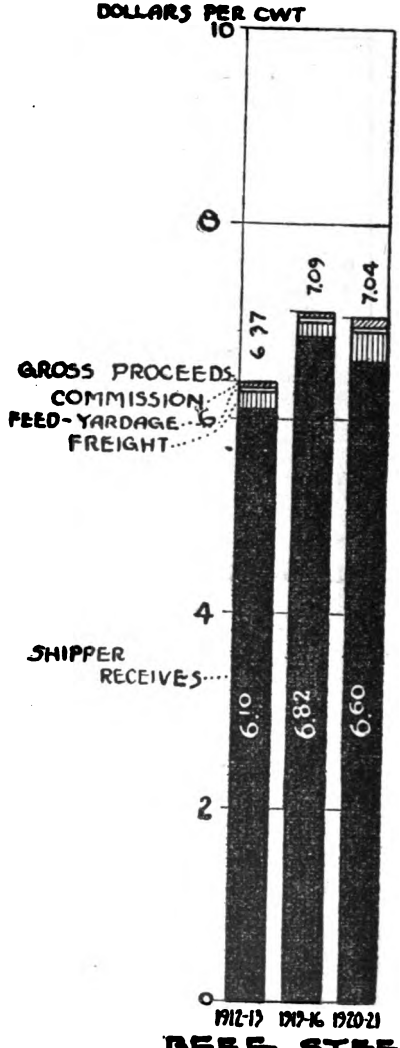
	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
12–13	$6.37	$0.05	$0.04	$0.18	$6.10
15–16	7.09	.06	.04	.17	6.82
20–21	7.04	.09	.05	.30	6.60

70678°—H. Rept. 408, pt. 4, 67–1——7

Digitized by Google

Chart A 30.

LIVE STOCK
TO SIOUX CITY, IA.
FROM
NORTH AND SOUTH DAKOTA, MINNESOTA



BEEF STEERS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE A46.—*Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to Sioux City, Iowa.*

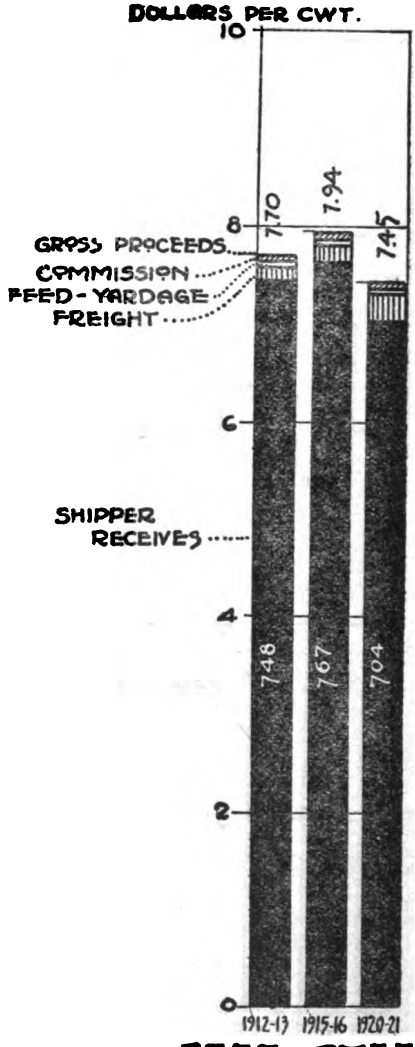
	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
1912-13	$6.37	$0.05	$0.04	$0.18	$6.10
1915-16	7.09	.06	.04	.17	6.82
1920-21	7.04	.09	.05	.30	6.60

70678°—H. Rept. 408, pt. 4, 67-1——7

Digitized by Google

Chart A 31.

LIVE STOCK
to SOUTH OMAHA, NEB.
FROM COLORADO - NEBRASKA.



BEEF STEERS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

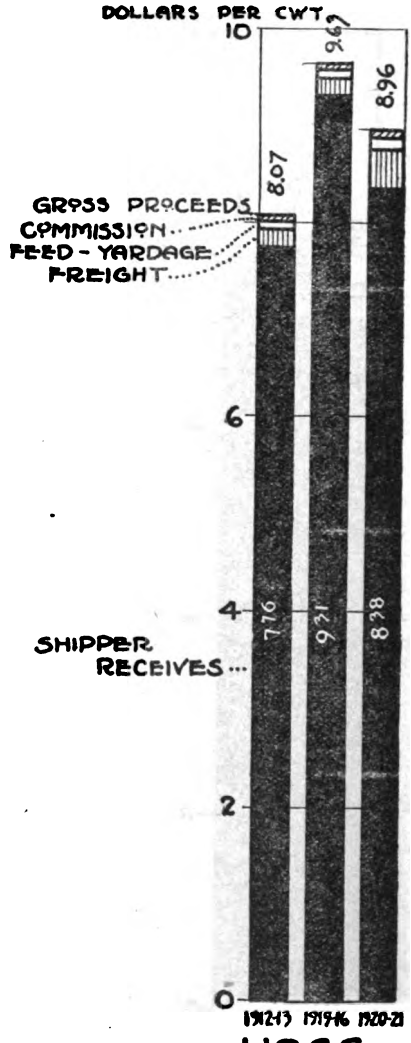
TABLE A47—*Average price per hundred pounds of beef steers received by the producer after deducting freight, feed, yardage, and commission charges to South Omaha, Nebr.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
12–13	$7.70	$0.05	$0.03	$0.14	$7.48
15–16	7.94	.06	.05	.16	7.67
20–21	7.45	.08	.05	.28	7.04

Digitized by Google

Chart A 32.

LIVE STOCK
TO CHICAGO, ILL
FROM
ILL.- MO.- IA.- S.D.- MINN.- WIS.



HOGS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

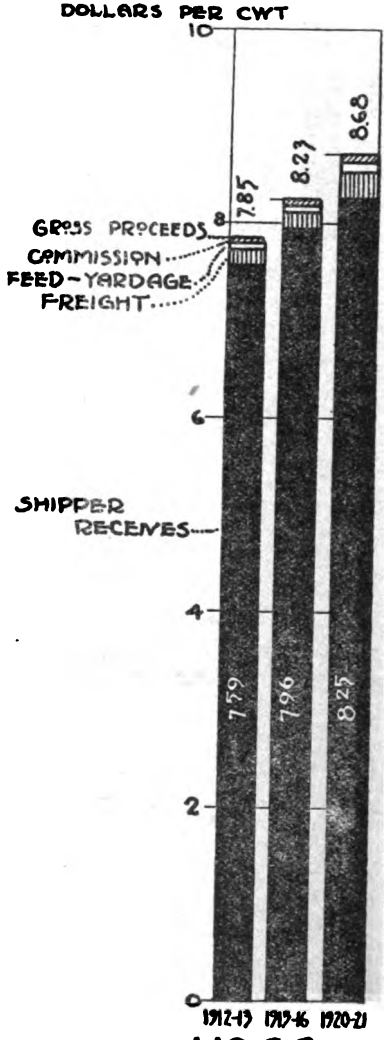
TABLE A48.—*Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to Chicago, Ill.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
1912-13	$8.07	$0.04	$0.06	$0.21	$7.76
1915-16	9.63	.04	.07	.21	9.31
1920-21	8.96	.08	.12	.38	8.38

Digitized by Google

Chart A 33.

LIVE STOCK
TO S. OMAHA, NEB.,
FROM NEBRASKA.



HOGS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

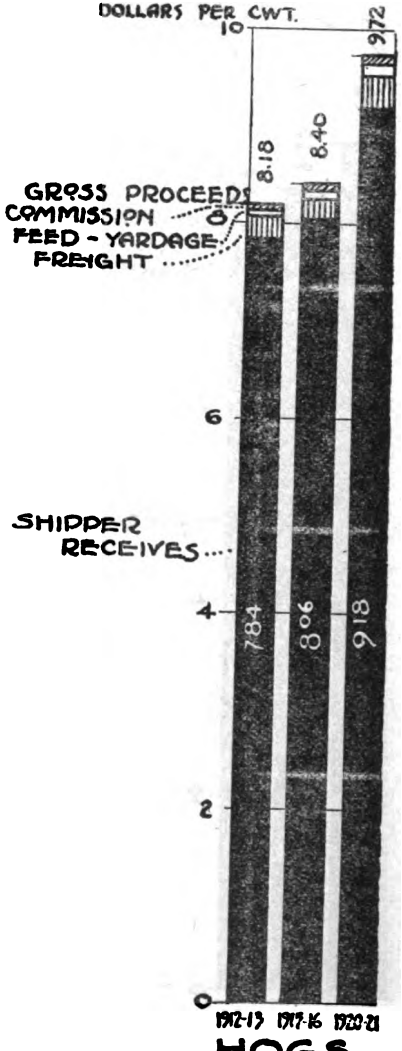
ABLE A49.—*Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to South Omaha, Nebr.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
912–13	$7.85	$0.05	$0.06	$0.15	$7.59
915–16	8.23	.05	.06	.16	7.96
920–21	8.68	.08	.09	.26	8.25

Digitized by Google

Chart A 34.

LIVE STOCK TO DENVER, COL. FROM COLORADO



HOGS

JOINT COMMISSION OF AGRICULTURAL INQUIRY

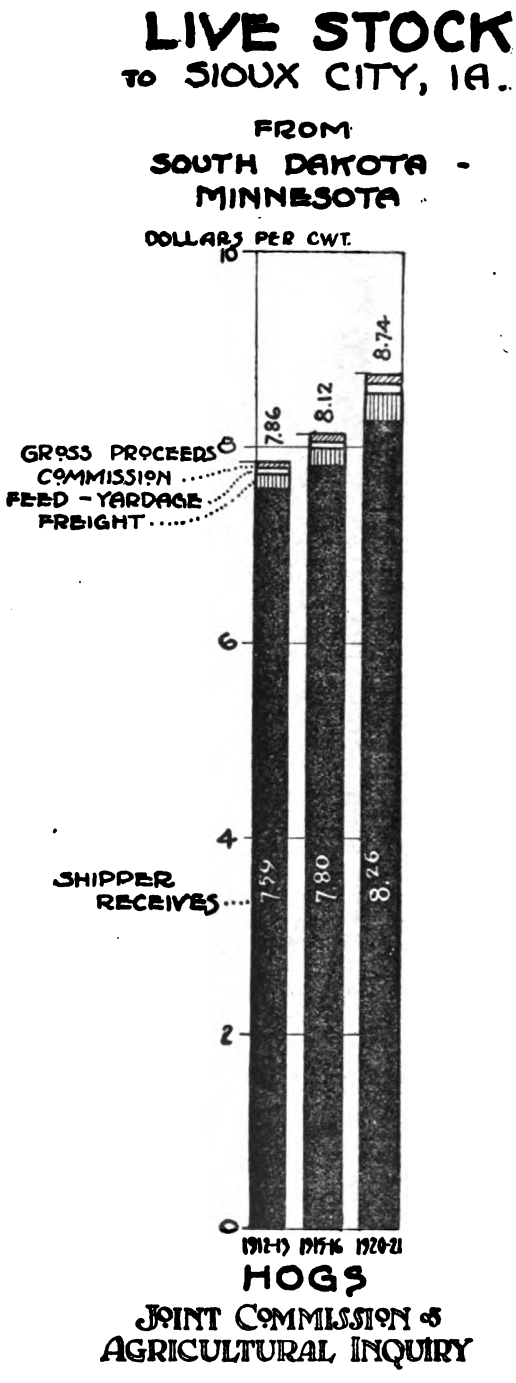
Digitized by Google

TABLE A50.—*Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to Denver, Colo.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
13	$8.18	$0.06	$0.06	$0.22	$7.84
16	8.40	.06	.08	.20	8.06
21	9.75	.09	.10	.34	9.18

Digitized by Google

Chart A 35.



Digitized by Google

A51.—*Average price per hundred pounds of hogs received by the producer after deducting freight, feed, yardage, and commission charges to Sioux City, Iowa.*

	Gross per hundredweight.	Commission.	Feed and yardage.	Freight.	Shipper receives.
	$7.96	$0.05	$0.05	$0.17	$7.58
	8.12	.05	.07	.17	7.82
	8.74	.10	.09	.28	8.26

Digitized by Google

POULTRY AND EGGS.

EGGS.

Eggs are a highly perishable commodity, for the most part a product of the farm, and are produced in practically all parts the country. The production is continuous throughout the ye year but greatly accentuated during the spring and summer, when per cent of the year's production is produced.

While in various sections of the country there are large individu poultry plants for the intensive production of eggs, the vast bulk commercial eggs is produced as a by-product on the farms in th Mississippi Valley and Corn Belt States. In the States of large su plus production the producer usually sells to the country store keeper for cash or in exchange for merchandise. In some instances however, eggs are sold to traveling collectors, a local produce mer chant, or to hucksters. The surplus eggs marketed in this manne generally move in less than carload shipments to primary market where they are in practically all cases rehandled, candled, graded, an repacked for carload shipment to terminal markets to be sold direct to a distributor or consigned to a commission man to be sold. On th Pacific coast, eggs are distributed principally through cooperativ shipping associations and shipped east in carload lots. Because eggs are extremely fragile, as well as highly perishable, there are heavy expenses for breakage and deterioration.

The widespread production and large consumption of eggs pur chased directly from the producer or through the local dealer have made it practically impossible to develop authentic price data except in terms of general average. Table A52 below shows the average prices received by the producer for the years 1913–1921, inclusive

TABLE A52.—*Eggs—Average price (cents per dozen) received by the farmers on the 15th of each month for the United States, 1913–1921.*

[Figures supplied by Department of Agriculture.]

	1913	1914	1915	1916	1917	1918	1919	1920	192
January	26.8	30.7	31.6	30.6	37.7	46.3	57.2	64.8	61.
February	22.8	28.4	29.2	26.8	35.8	49.4	48.3	56.9	49.
March	19.4	24.2	21.3	21.2	33.8	40.4	33.1	46.6	33.
April	16.4	17.6	16.6	17.9	25.9	31.2	34.3	38.8	29.
May	16.1	16.8	17.1	18.1	30.0	31.0	36.8	37.4	27.
June	16.9	17.3	16.6	19.0	31.1	29.8	38.6	37.0	25.
July	17.0	17.6	16.8	19.7	28.3	30.7	36.8	38.7	22.
August	17.2	18.2	17.0	20.7	29.8	34.4	39.3	40.0	25.
September	19.5	21.0	18.7	23.3	33.2	36.4	41.0	44.2	33.
October	23.4	23.5	22.3	28.1	37.4	41.6	44.7	50.1	41.
November	27.4	25.3	26.3	32.2	39.4	47.2	54.0	58.9	41.
December	33.0	29.7	30.6	38.1	43.3	55.0	61.9	65.0	51.

In Chapter V dealing with cold storage chart A37 is presented showing the inflow and distribution of storage holdings of eggs. In Chapter VIII dealing with retailing, the prices and margins on eggs are presented by charts D16–m, D16–n, and D16–o.

POULTRY.

The handling and distribution of farm poultry are similar to the handling and distribution of eggs. Usually the same agencies

Digitized by Google

milar agencies conduct these enterprises on practically the same ;. When the country packer receives poultry it is sorted and ;r immediately dressed or shipped alive to distributors or mission men in the terminal markets or placed in feeding stations inal preparation for market. Poultry is graded as to size and ity, some for immediate consumption and some for cold storage.

WHITE POTATOES.

he white potato crop is the most important vegetable food crop vn in the United States. It ranks eighth in the list of all crops oint of total value. While potatoes are grown to some extent ractically all parts of the country, there are many States in ch production is insufficient for home consumption.

Iany Southern States grow two potato crops a year, but southern itory generally, during certain periods of each year, is dependent n supplies from Northern States. The first southern crop is vested from April to July and is moved at time of digging, with result that Texas, for example, may be shipping potatoes north the 15th of June and be receiving shipments from the North on 30th of the same month.

Table A53 below shows the agricultural production of potatoes States for the period 1917–1921:

TABLE A53.—*Production of potatoes in the United States, 1917–1921.*

[Bushels, 000 omitted.]

[Department of Agriculture.]

States.	1917	1918	1919	1920	1921
ne	20,250	22,400	25,530	21,771	37,152
v Hampshire	2,247	2,940	1,428	1,905	2,240
mont	3,000	3,289	2,400	3,510	3,750
ssachusetts	4,370	4,788	2,790	4,000	3,335
ode Island	675	650	400	336	345
necticut	3,190	2,479	1,800	2,700	2,369
w York	38,000	34,980	33,790	40,625	33,980
w Jersey	11,172	8,464	7,968	14,040	9,025
nsylvania	29,532	24,400	23,400	28,200	21,586
laware	1,235	957	913	1,080	960
ryland	6,000	4,900	4,700	5,508	3,185
ginia	19,800	11,750	13,794	18,480	14,068
st Virginia	7,475	5,220	4,050	5,640	4,080
rth Carolina	4,500	4,275	3,760	4,186	4,048
uth Carolina	1,440	2,885	1,700	2,800	2,560
orgia	1,596	1,610	1,190	1,628	1,725
rida	2,275	3,560	1,368	2,415	1,564
io	16,000	11,040	7,645	11,600	6,728
diana	8,464	7,760	3,168	6,528	3,570
inois	13,500	11,520	6,200	7,920	6,413
ichigan	35,910	28,560	27,000	30,225	27,260
isconsin	34,998	33,040	28,388	33,264	21,420
innesota	33,600	32,760	28,884	31,581	27,525
wa	13,110	9,648	4,462	10,560	4,128
issouri	9,483	6,954	5,625	6,560	4,756
orth Dakota	3,870	8,910	5,220	6,557	11,520
uth Dakota	7,200	8,190	4,050	7,950	4,400
ebraska	12,495	10,488	5,720	8,415	8,160
ansas	4,446	4,240	5,168	5,100	4,160
entucky	6,720	5,625	4,200	5,643	3,770
nnessee	4,888	3,560	2,345	2,985	1,830
labama	2,952	4,860	2,000	1,860	2,400
ississippi	1,092	1,666	1,580	1,302	1,068
ouisiana	1,600	4,345	1,600	1,755	1,809
exas	2,760	3,360	2,920	1,872	2,072
klahoma	2,484	1,258	2,775	2,590	2,088
rkansas	2,400	2,400	2,628	2,418	1,815

Digitized by Google

TABLE A53.—*Production of potatoes in the United States, 1917–1921*—Continued.

States.	1917	1918	1919	1920	1921
Montana	5,415	7,020	2,280	4,400	5,
Wyoming	4,650	4,500	1,200	1,875	2,
Colorado	9,310	11,376	8,855	9,490	11,
New Mexico	1,276	1,000	232	300	
Arizona	420	425	280	360	
Utah	4,347	3,600	1,632	3,024	2,
Nevada	3,105	1,539	540	540	
Idaho	6,084	5,220	6,665	8,100	10,
Washington	9,875	8,580	6,875	8,215	7,
Oregon	8,100	5,500	4,230	5,590	3,
California	15,255	12,870	8,580	9,800	10,
Total	442,566	400,115	323,887	403,287	346,

CARLOAD SHIPMENTS BY STATES OF ORIGIN, 1917–1921.

Carload shipment figures as reported by the carriers to the United States Department of Agriculture are only partially complete. They are a useful and important guide but can not be regarded as indicating the total movement nor can they be taken for the purpose of accurately comparing the movement in different years, since each year they are becoming more and more complete, by the inclusion of factors not previously covered.

Table A54 below shows the carload shipments, by States, for the same period.

CARLOAD SHIPMENT OF POTATOES 1917–1921.

TABLE A54.

States.	1917	1918	1919	1920	1921
Maine	19,688	16,048	22,601	18,833	26,183
New York	6,456	10,604	11,399	12,643	21,249
New Jersey	11,402	6,113	10,484	14,765	10,497
Pennsylvania	2,666	2,691	3,538	4,760	4,726
Maryland	2,536	1,444	1,996	3,459	2,676
Virginia	20,440	11,942	12,399	15,984	19,610
North Carolina	3,395	5,554	3,346	3,499	3,538
South Carolina	2,440	2,812	1,217	3,069	2,501
Florida	4,284	4,846	2,278	3,349	2,341
Michigan	5,187	10,271	11,844	9,539	14,499
Wisconsin	10,283	18,453	20,923	12,972	14,909
Minnesota	12,547	21,920	24,347	21,511	25,442
Iowa	440	934	.....	878	122
North Dakota	.....	1,628	2,917	1,620	2,086
South Dakota	966	1,223	757	1,720	3,063
Nebraska	1,518	3,163	2,534	2,389	4,467
Kansas	837	824	1,133	1,960	2,557
Kentucky	717	691	963	904	835
Alabama	633	586	.....	.....	694
Louisiana	1,063	4,045	553	892	1,143
Texas	1,689	2,317	806	733	1,111
Oklahoma	663	.....	678	579	253
Arkansas	339	.....	.....	.....	116
Montana	.....	.....	828	626	1,227
Wyoming	.....	.....	401	444	722
Colorado	9,791	14,145	12,765	8,957	11,920
Utah	667	567	476	480	1,111
Nevada	1,158	815	875	.....	552
Idaho	5,830	7,616	8,859	6,798	10,542
Washington	2,762	2,257	4,095	3,216	4,753
Oregon	3,436	1,816	1,276	1,085	1,619
California	6,570	10,933	9,081	9,396	8,078
All other	2,409	3,292	1,713	.....	1,372
Total	142,812	169,250	177,082	166,960	213,534

Digitized by Google

rket prices of potatoes for the months from September to May, sive, are to a great extent influenced by the production in the s of Maine, Minnesota, New York, Wisconsin, Michigan, ado, Idaho, North Dakota, California, Washington, South ta, and Oregon, all of which are important shipping States. uction in the Central and Ohio River States, while used largely ome consumption, has an important price influence. Chart A36 age 102 shows the relationship between prices and production. It be observed that where a potato harvest falls materially under 00,000 bushels prices are usually high during the following spring ths; if the crops materially exceed 400,000,000 bushels, spring s are usually low.

METHODS OF HANDLING AND MARKETING LATE POTATO CROPS.

the large producing sections of the Northern, Central, and East- States potatoes are for the most part sold for cash at points of in in wagon or truck loads. The grower delivers his crop to the ping stations, generally in bulk. The stock purchased is then led, sacked, stored, and loaded by the wholesale shippers, who dle it through frost-proof warehouses.

wholesale shipper may operate as many as 50 to 150 branch ehouses with a buyer in charge at each point. At practically all blished shipping points there is at least one and sometimes as ny as twenty warehouses. Comparatively few shipments are de on commission from the territory described. In some instances wholesale shipper advances money to the grower to help make crop.

METHODS OF HANDLING IN WESTERN STATES.

In the West it is customary for growers to grade and sack their atoes and sell in car-lots or round lots of more than a carload to ppers for cash. In some instances crops are contracted at stipu- ed prices in advance of time of delivery, in which case the producer quently receives a payment on account to aid him in producing or rvesting his crop.

COOPERATIVE MARKETING.

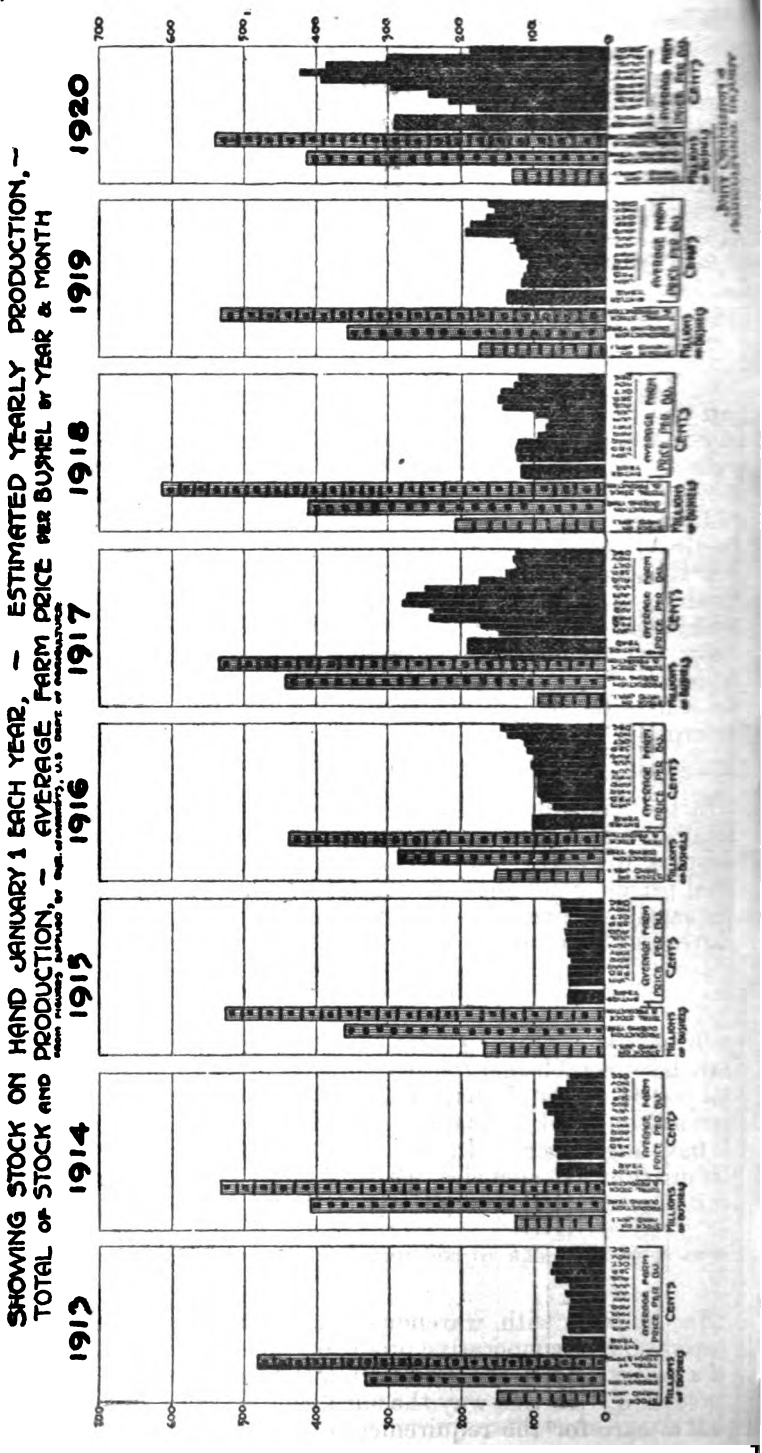
In many producing sections farmers' cooperative associations ve been established for the purpose of assembling and disposing of e potato crops of their members. These associations for the most rt sell on track at loading stations, either to wholesale shippers or traveling buyers. In some instances arrangements are made with r distributing agencies, which handle the tonnage on commission at a specified charge per car.

UTE FROM PRODUCER TO CONSUMER—FUNCTIONS OF THE VARIOUS BRANCHES OF THE TRADE.

The shipper with warehouse facilities, whether individual, firm, rporation, or cooperative producers' association, acts in the capacity f a reservoir for the potatoes which are used in periods of non- roduction. In this way the surplus at harvest time is absorbed and eld to care for the requirements of consumption during the period

Digitized by Google

Chart A 36.



Digitized by Google

of nonproduction. Growers frequently store and hold their potatoes for late market rather than sell for cash in the fall.

SHIPPING IN WINTER MONTHS.

Severe hazards are encountered in shipping potatoes during the winter months. Care and judgment must be used to protect shipments from frost in transit. False floors and side linings permitting the circulation of heat from various types of stoves used for car heating must frequently be provided. Losses incident to such shipments are a considerable item.

CITY WHOLESALER.

The city wholesaler generally secures his potatoes from the stock held by shipping wholesalers or warehouses at points of origin. The former carries a certain supply against such time as weather conditions may cut off his receipts, and for the purpose of meeting the demands of the retailer.

RETAILERS' STOCKS.

The retailer usually carries a limited stock of potatoes. In the smaller towns, where there are no wholesalers, his supply must be larger. There is a noticeable tendency on the part of the public to buy new potatoes at relatively high prices when there may be an abundance of old potatoes of equal food value available at low prices.

SOUTHERN OR EARLY CROP.

The southern or early crop is not stored, but is used for immediate consumption. While in some districts wholesalers buy ungraded stock, the crop generally is graded, sacked, or packed in barrels, and loaded by the grower. The most common method of sale, particularly in areas of large production, is to buyers who pay cash on track at point of origin and assume the work of distribution from that point. In some cases growing organizations sell the products of a group of producers. Individual growers in the South not infrequently consign the crop to commission merchants.

70678°—H. Rept. 408, pt. 4, 67-1——8

Digitized by Google

Chapter V.

MOVEMENT AND MARKETS.

The transportation of agricultural products from local markets to primary and terminal markets is comprehensively covered in Part III of the commission's report, entitled "Transportation."

The relationship between transportation and marketing and distribution is so intimate that distribution can not be fully considered without careful study of the relationship between freight rates and commodity prices.

PRIMARY MARKETS.

Primary markets are points of assembly or concentration of shipments from numerous local markets to be transported to terminal markets. No definite distinction can be made between primary and terminal markets, because in some instances shipments are made for sale at the first point of concentration, while similar shipments are merely consolidated and forwarded to larger or other markets. For instance, Minneapolis is both a primary and terminal market for grain—a primary market when grain is to be forwarded to Chicago or seaboard and a terminal market when grain is to be converted into flour in Minneapolis mills.

TERMINAL MARKETS.

The various grains move in carload lots or ship cargoes to terminal elevators for storage, or to mill elevators for conversion into food products, and are probably more efficiently handled than other agricultural products, with the possible exception of live stock.

Live stock generally enters terminal markets either in carloads of cattle, sheep, or hogs, or in combination carload shipments, moving directly to union stockyards accessible to the various packing plants.

Cotton generally enters the terminal market in carload lots or in considerable shipments by water, and is unloaded on wharves or into warehouses publicly operated or under the supervision of an exchange.

Terminal market facilities, generally speaking, have not kept pace either with increased production or improved transportation. In an earlier chapter, attention has been called to the fact that the movement of fruits and vegetables has increased about fourfold in the last 20 years. Most markets have outgrown the present facilities, and the problem of securing improved terminal markets is one of most urgent importance. The wholesale fruit and vegetable market in each city is usually situated in a fairly compact district; in the smaller markets the wholesaler is frequently located adjacent to the tracks of the railroad serving that market. This arrangement makes for economical handling. In most of the older cities, however,

Digitized by Google

wholesale market was established years ago, before rail movements assumed such important proportions, and when the principal ce of supply was the immediate surrounding countryside. Such hese older cities as enjoyed water transportation generally located market place for perishable products at the waterside. As a lt of these early influences, it is not infrequently the case that lesale markets are situated at a considerable distance from rail inals.

s cities have grown, increasing land and rental values and the tia of custom and tradition have prevented relocation or the ovement and extension of wholesale markets in accordance with ls. Changes can now be made only through the cooperation of icipalities, carriers, and wholesalers.

oduction has not been confined to territory contiguous to any icular railroads, but has naturally developed wherever land was t suitable and railroad service was available. The result has . that practically every railroad entering any given market con- ites to the supply of perishables. The difficulties attending the and distribution of these products increase with the number of ers serving the particular market.

CHICAGO WHOLESALE MARKET.

icago, which is served by some 27 trunk-line railroads and sev- boat lines, furnishes an extreme example. The wholesale market nds over a section of some five or six city blocks along South er Street, a narrow thoroughfare at the north end of what is known ne "loop"—one of the most congested business districts in the d. The rail and water terminals are situated at distances vary- from 4 blocks to 2 miles from the South Water Street market. e some commodities, notably potatoes and watermelons, are at railroad terminals, most of the fruits and vegetables must be ed by wagon or motor truck over rough streets, across and igh the most congested portion of the city. None of this cart- r rehandling adds in any way to the value of the product, but es add materially to the cost of distribution.

riving at the South Water Street market, fruits and vegetables , in a large measure at least, be unloaded, and, when sold, loaded again transported over the same routes, no inconsiderable on being carted back to the railroad yard or depot from which started on their city journey. Conditions have become so us that the city of Chicago is eliminating the established market stroying South Water Street in its present form. No provisions been made for a new wholesale market. A mere relocation of vholesale district can not materially improve the present un- mic methods of handling. A wholesale railroad terminal to n all carriers would have access and about which the wholesale ct could be established is the pressing need.

NEW YORK CITY WHOLESALE MARKET.

w railroads have rail terminal facilities in New York City. ically all perishables, whether arriving by rail or boat, are

Digitized by Google

delivered onto docks controlled by the different carriers. Wholesale markets have been established on many of these docks, so that a considerable portion of the unloads are immediately sold right at the terminals. Wholesale stores are located along a series of streets close by, to which a certain portion of the receipts is carted for disposition at wholesale.

There is no joining of carriers in the common use of docks. For example, barreled apples, to meet favorable sale, must have New York Central delivery; boxed apples, on the contrary, must have Erie delivery. The result is that the buyer desiring to purchase apples packed in the two types of packages secures his supplies at two different docks some distance apart. If the same buyer desires certain other fruits or vegetables he must go to still other docks. New York needs a unification of docks. While no one dock could be developed sufficiently large to handle all of the various lines of perishables, docks might be set aside for the handling of given commodities, such, for example, as an apple dock, a potato, cabbage, and onion dock, a general fresh vegetable dock, etc., and then, regardless of which particular railroad enjoyed the haul, the delivery of the commodity should be at the particular dock for that particular commodity. Such docks should be as closely contiguous as possible, so that the wholesale district might be more centralized and unified.

PITTSBURGH WHOLESALE MARKET.

Pittsburgh is more favorably situated with respect to terminal facilities than many cities. A team track produce yard with a capacity of about 530 cars has been established on the Pennsylvania Railroad. Practically all of the produce brought into Pittsburgh is handled through this yard. From 60 to 65 per cent of all sales made in Pittsburgh wholesale market are made to out-of-town buyers. The centralization of the wholesale market about a single terminal makes for economy and efficiency, by eliminating much cartage and rehandling. Particularly is this true in the redistribution to surrounding territory.

WHOLESALE MARKETS IN OTHER CITIES.

The description of conditions in Chicago, New York, and Pittsburgh is more or less applicable to all of the older and larger cities. Difficulties in such cities are multiplied by the number of railroad lines by which they are served. A unification of terminals is a pressing need in the distribution of fruits and vegetables.

WHOLESALE CHANNELS.

Fruits and vegetables usually arrive at terminal markets in car lots, although smaller shipments are not infrequent, particularly from near-by territory. Once arrived at terminals, these commodities usually reach the consumer by passing through (1) wholesale market, (2) retail market. In some cases the wholesale market is subdivided into a wholesale and a jobbing market.

Digitized by Google

Agencies engaged in the wholesale distribution of fresh fruits and vegetables may be generally classified as follows: (1) Wholesale operator on his own account, (2) commission merchant, (3) broker, (4) auction, (5) jobber. In many cases these agencies are erroneously included under the one term, "commission merchant." The car-lot distributor who plays an important part in wholesale distribution has already been described with relation to the local market. In naming and describing the different agencies it must be kept in mind that they do not constitute a chain, but represent the different optional and essential channels through which goods may flow.

WHOLESALE OPERATOR ON HIS OWN ACCOUNT.

This operator may be situated at either point of origin or destination or may have a place of business at both points. He invests his own money or credit in the actual purchase of the commodity; in some cases he grades and packs it or assembles it, pays transportation, assumes the hazard, and finds the market for his purchases.

The city wholesaler's field of distribution is generally through the wholesale jobbers and retailers and then to the consumer. On large markets he may sell in car lots, truck loads, or broken lots of large volume. Sales may be made to wholesale jobbers, to retailers, or direct to the final users, like canners or bakers. Frequently, and especially in smaller markets, wholesaling and jobbing are performed by a single agent.

Those engaged in the wholesaling of fruits and vegetables frequently make direct advances to the grower or in other ways assist in the financing of production. In some cases interest is charged on such advances; in others, not. In some districts production is largely financed by wholesalers.

Radiating from every city is a certain field of distribution in smaller towns and cities. The dealers in these latter places buy from the wholesalers in the centrally located markets. Distribution to the smaller markets may be by car lot, less than car lot, or express shipments of a single package. The small dealer is often inclined to buy from hand to mouth, filling his requirements without assuming the hazard of large advance shipments. We thus find a field of wholesale distribution radiating out from every large market.

COMMISSION MERCHANT.

The commission merchant is one who for a certain percentage of the total sales price offers his service in the selling of any particular commodity. Under this arrangement the commission merchant becomes the agent of the owner; he has physical custody of the commodity and the proceeds of sales, and unless specifically directed by the owner, has full control of the selling. He accounts to the owner and makes collections. He may sell in car lots on track, or break bulk and make sales and deliveries in small lots through his store. His field of distribution is the same as the wholesale operator on his own account. Through the wholesale operator and the commission merchant, the grower or shipper simply finds two channels of reaching the wholesale market. If he feels that the cash price at point of origin is unsatisfactory, or if there are no purchasers at point of origin, he

Digitized by Google

may consign his produce for sale on commission, in the hope of a more favorable sale.

Like the wholesaler, the commission merchant frequently advances money to finance production in various districts.

BROKER.

Fruit and vegetable brokers are found in all important markets. Their function is to negotiate sales between buyers and sellers.

The broker is distinguished from the commission merchant in that, except in special cases, he is legally the representative of both the buyer and seller; and furthermore, because he does not have physical custody of the commodity or of the funds as does the commission merchant. In the case of special buying and selling brokers, however, these agents may represent their particular principals. The brokers usually operate on a per car basis of from $10 to $25, depending upon the extent of the service.

AUCTION.

Auction markets are found in a number of our important centers of population. There are probably not to exceed 20 in the United States—New York has four, Chicago has two. The auction method of sale makes for rapid distribution. The goods are sent to the auction, samples are displayed, and the shipments are sold to the highest bidder. This system has come into prominence particularly in connection with the sale of imported goods and goods which are sufficiently well standardized to permit of systematic sampling. Many car-lot receivers use the auction to a large extent. The cost of service averages from 2½ to 3 per cent, including per package charge to buyers. Anyone with established credit can bid. It is customary for the seller to have an accredited representative present at auction sales. In many cases growers' associations dispose of their output in this manner. The seller or seller's agents usually have the privilege of withdrawing the goods from sale at a certain point in the bidding or of restricting the quantity sold to a recognized minimum. The seller is not allowed to bid upon his own goods.

WHOLESALE JOBBER.

The jobber's field is usually a specific city or town and the surrounding territory. He may buy from car-lot distributors, large wholesalers, the auction, or directly from the producer or shipper at point of origin. His purchases may be straight or part car-lots. He splits up these purchases and sells them in small lots direct to retailers or fruit venders. In some cases jobbing and wholesaling may be synonymous. The jobber is simply a wholesaler who gives special service in the way of credit, delivery, and special attention to diversified and small sales. Large wholesalers who purchase and distribute in carload lots often maintain stores in which they do a jobbing business.

In many sections of the United States, especially in the far West, Northwest, Middle West, and South, there are fruit and vegetable wholesale firms often called jobbing houses, which do a business similar to that of wholesale grocers. They buy in car lots, draw from considerable territory for their supplies, carry lines in season, frequently pack and repack commodities, and distribute to local

Digitized by Google

retailers by truck and to surrounding territory by express and less than carload freight. In the West some of the wholesale houses cover as much as 200 or 300 miles of territory and employ a force of traveling salesmen. Retailers are canvassed at regular intervals by agents.

Occasionally rumors arise that fresh fruits and vegetables are being destroyed in principal markets for the purpose of enhancing the value of the remaining supplies. Investigations have been made from time to time by various governmental agencies to determine the foundation for such rumors. So far as the commission has been able to ascertain there is no ground for believing that such willful destruction has occurred. Occasionally these commodities arrive in market in a frozen, decayed, or otherwise inedible condition. Shipments are sometimes condemned by local boards of health as unfit for human consumption. The destruction of these shipments is sometimes the cause of the rumors mentioned.

COLD STORAGE IN PRIMARY AND TERMINAL MARKETS.

Cold storage has become a factor of vital importance to the producer and consumer alike in the conservation and distribution of perishable products.

In the primary markets cold storage and refrigeration have become economic necessities in precooling or chilling products until sufficient volume has been accumulated for economical shipment. In the movement from primary market to terminal market, transportation and refrigeration are combined for the conservation of perishable commodities in transit, and refrigerator cars become temporary cold-storage plants when they enter oversupplied markets. The fact that perishable commodities are shipped under refrigeration makes it possible either to hold shipments on the tracks until surplus products are absorbed, or to reconsign to another market in need of such commodities. The meat-packing industry, as a result of its organized storage and refrigeration in transit facilities, can supply fresh meat to practically every consuming market. Without refrigeration, slaughter would of necessity be confined to local distribution in the immediate vicinity of production.

There is also another class of temporary cold storage which is an important factor in extending somewhat the comparatively short seasons during which highly perishable fruits and vegetables are available. This is the refrigeration supplied by commission merchants and wholesale receivers for the protection of products during their distribution.

The laws of practically all States recognize the desirability of temporary storage and exempt from marking requirements all stock held under refrigeration for 30 days or less.

There is a third class of cold storage that has most greatly affected the consuming habits of the American people—the cold storage which absorbs the surplus of the seasonal crop of semiperishable commodities and makes them available through practically the entire year. The vast metropolitan centers could not exist without refrigeration storage reservoirs of food stocks. In its economic function, cold storage tends to stabilize market prices to the producer by absorbing into reserve stocks the excess production of the peak

Digitized by Google

producing period at higher prices than would prevail if it were necessary to dispose of the entire crop immediately to the consuming public. It also serves to provide the consumer with a normal supply of seasonally produced commodities during periods of deficient production at lower prices than would prevail if no reserve stock were available.

The abnormal conditions of the post-war years have tended to increase cold-storage facilities rapidly, and it now seems that the existing facilities are adequate in capacity and in general well located with reference to distribution. In fact, during the depression there has been a surplus of possibly 50 per cent of total available cold-storage space. There are three general classes of cold-storage warehouses—public, private, and combined public and private. The greater percentage of cold-storage space is of the first class or public. Private cold storage is operated exclusively for the storage of products produced or dealt in by the owners. The combined public and private cold-storage warehouses make available to public use the surplus space not required by private owners.

The Bureau of Markets of the Department of Agriculture has made extensive surveys of cold-storage service in its relation to the conservation of dairy products, poultry and eggs, fresh meat and fresh meat products, fish, frozen small fish, cheese, condensed milk, packing-house products, fresh fruits and vegetables, dried fruits, nuts, cereals, candy, sorghums, etc.

The general services performed by the public cold-storage warehouses include the receiving, handling, and shipping of goods to and from the warehouse, maintaining proper temperatures for the various commodities in storage, inspecting, weighing, repacking, and other special services.

The operators of cold-storage warehouses are a considerable factor in financing perishable products in cold storage. This service they can well render, because of their intimate knowledge and their responsibility for the collateral. However, in many instances, competitive conditions have created a tendency to make excessive loans to secure business, and this has operated to develop speculation in perishable foods. These loans are based on negotiations of warehouse receipts issued under the so-called warehouse receipts act, which has now become the law of practically all the States. These receipts may also be used as collateral security for loans by banking institutions to owners of the products in cold storage. Uniformly these laws provide that—

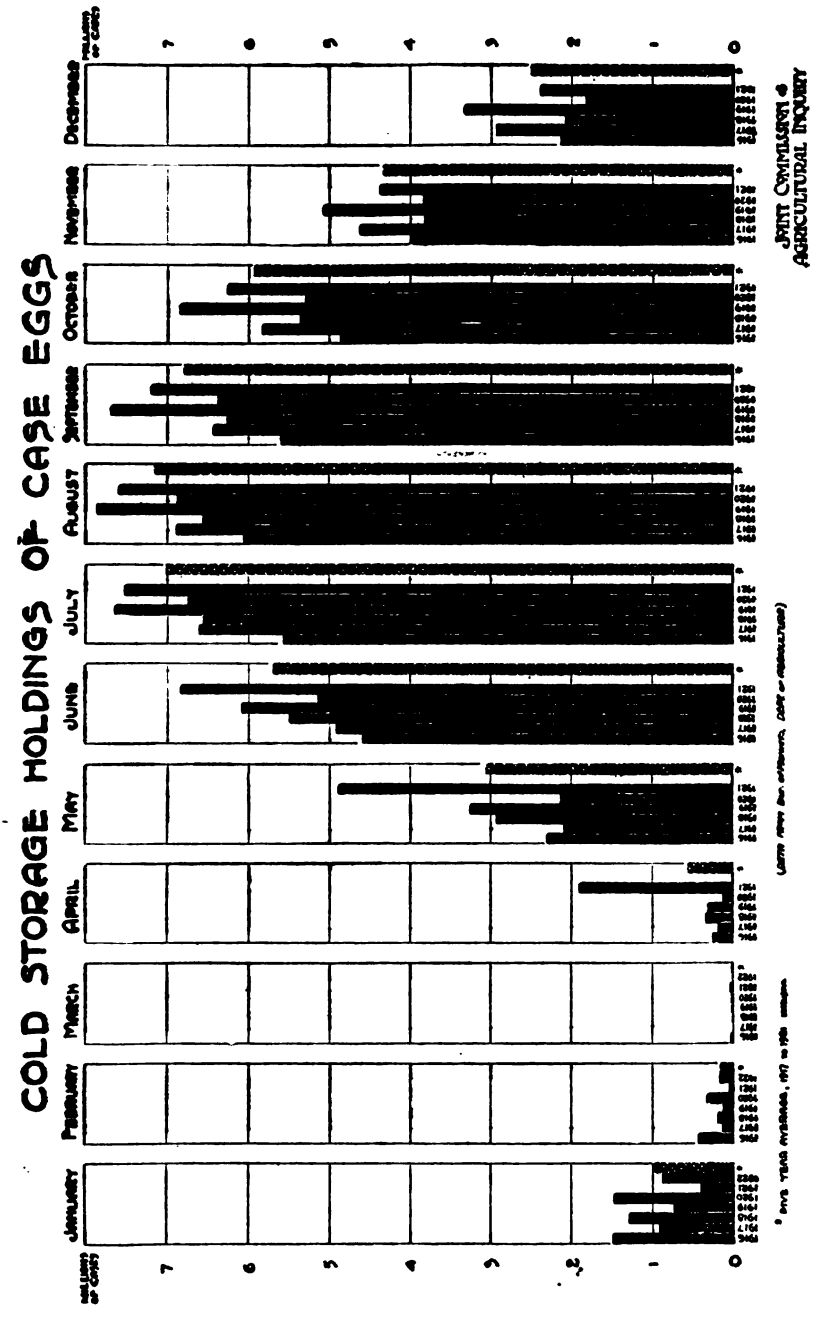
> A warehouse man shall be liable for any loss or injury to the goods caused by his failure to exercise such care in regard to them as a reasonably careful owner of similar goods would exercise, but he shall not be liable, in the absence of an agreement to the contrary, for any loss or injury to the goods which could not have been avoided by the exercise of such care.

The development of the cold-storage industry from a small beginning, with ice as a refrigerant, to its present importance with efficient methods of mechanical refrigeration, has been extremely rapid. While they are not general, certain abuses have developed within the cold-storage industry that have worked to the disadvantage of both the public and the industry itself.

Chart A 37, on page 111, shows the relationship of cold storage to the distribution of eggs. See Table A 55, on page 113.

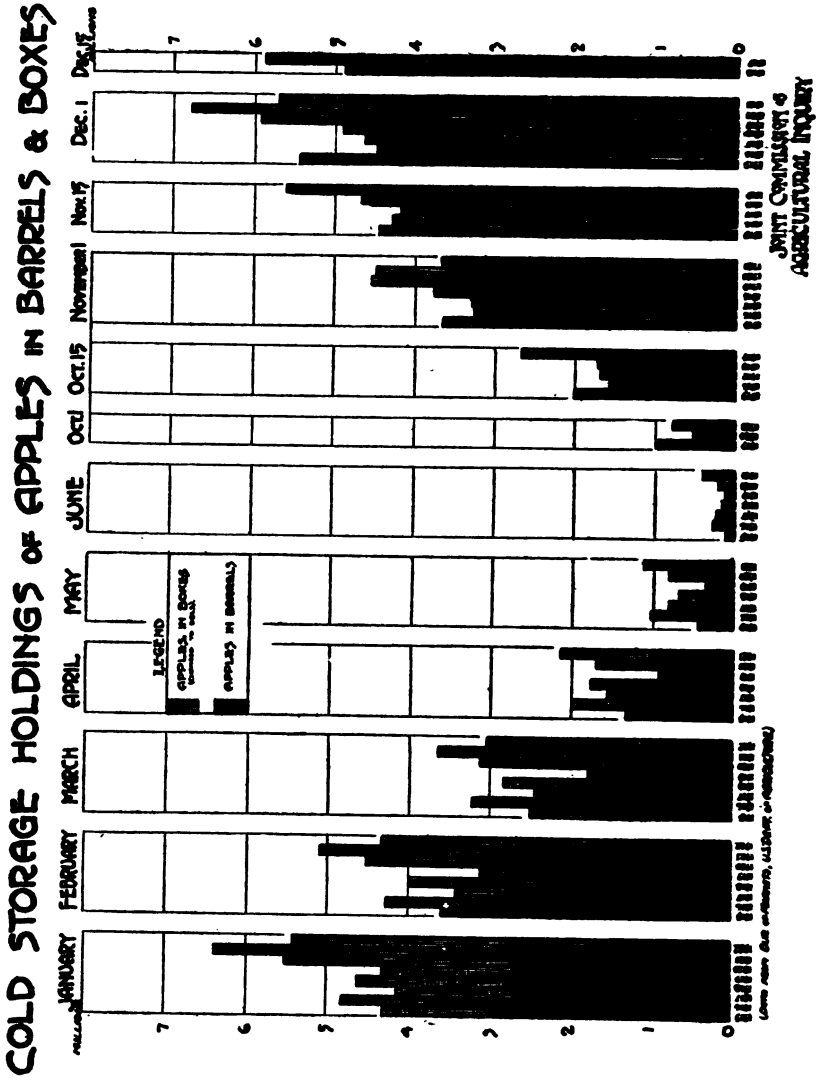
Digitized by Google

Chart A 37.



Digitized by Google

Chart A 38.



Digitized by Google

TABLE A55.—*Cold-storage holdings of case eggs as reported to the Bureau of Markets and Crop Estimates.*

Date.	1915	1916	1917	1918	1919	1920	1921	1922
January		1,507,720	919,531	1,300,280	739,545	1,542,146	408,343	889,076
February		457,954	148,943	199,511	120,009	342,140	43,440	179,326
March		34,761	6,891	20,187	26,285	28,849	43,050	13,132
April		263,644	190,358	343,962	319,508	121,733	1,926,108	
May		2,327,174	2,104,797	2,957,086	3,278,247	2,135,117	4,909,309	
June		4,593,107	4,921,674	5,499,208	6,093,448	5,142,957	6,843,993	
July		5,574,433	6,616,890	6,554,486	7,658,841	6,747,077	7,533,765	
August	5,028,812	6,060,129	6,894,544	6,568,494	7,849,778	6,871,930	7,604,995	
September	5,682,950	5,600,199	6,436,234	6,265,065	7,684,946	6,371,938	7,200,645	
October	5,019,022	4,867,600	5,837,302	5,369,403	6,858,081	5,295,313	6,269,083	
November	3,686,533	3,984,534	4,638,425	3,811,985	5,087,230	3,837,960	4,380,004	
December	2,787,802	2,146,354	2,948,230	2,070,529	3,340,509	1,824,473	2,402,656	

Chart A 38 on page 112 reflects the cold-storage holdings of apples during the intervals between crops. See Table A 56 below.

TABLE A56.—*Cold-storage holdings of apples as reported to the Bureau of Markets and Crop Estimates.*

BOXED.

Date.	1915	1916	1917	1918	1919	1920	1921	1922
January	1,363,784	1,069,168	1,451,908	1,844,740	1,712,242	2,836,023	2,419,812	3,687,091
February	1,147,044	912,803	1,263,500	1,730,625	1,401,543	2,432,111	2,088,555	2,889,132
March	774,489	698,811	882,009	1,254,540	810,274	1,776,928	1,629,895	2,069,758
April	447,076	422,644	501,499	805,236	469,943	993,972	1,182,786	
May	175,102	236,221	265,266	321,886	181,786	532,742	669,825	
June	47,399	85,948	82,136	57,427	56,623	148,994	275,375	
Oct. 1					146,793	92,463	222,204	
Oct. 15	353,425	393,739	389,506	257,040	686,184			
Nov. 1	596,425	729,917	738,659	837,514	1,414,748	959,240	1,821,455	
Nov. 15	919,004	1,132,512	1,267,281	1,314,534	2,229,556			
Dec. 1	1,228,186	1,325,742	1,494,263	1,648,491	2,597,511	2,216,846	3,760,297	
Dec. 15				1,769,514	2,869,088			

BARRELED.

Date.	1915	1916	1917	1918	1919	1920	1921	1922
January	2,929,441	3,743,055	2,680,249	2,753,784	2,581,949	2,692,731	3,965,795	1,741,620
February	2,437,644	3,323,650	2,121,206	2,226,324	1,703,672	2,091,783	3,016,100	1,424,025
March	1,716,430	2,543,034	1,560,042	1,575,372	961,633	1,384,710	2,019,646	988,557
April	896,041	1,560,965	1,043,606	977,859	486,516	704,631	1,026,739	
May	299,111	798,704	542,559	355,701	197,927	273,717	448,874	
June	60,812	217,586	183,159	101,403	68,141	64,376	170,101	
Oct. 1					824,264	451,514	569,828	
Oct. 15	1,671,942	1,207,472	1,310,548	1,471,731	2,002,861			
Nov. 1	3,092,556	2,529,821	2,557,599	2,914,828	3,108,246	3,515,731	1,821,647	
Nov. 15	3,512,178	3,157,095	2,921,904	3,362,360	3,382,625			
Dec. 1	4,213,203	3,166,301	3,195,027	3,279,820	3,325,508	4,570,067	1,979,098	
Dec. 15				3,104,050	3,010,337			

STORAGE WAREHOUSES.

There is an almost entire lack of data relating to warehousing location or adequacy. However, it is known that there is insufficient warehouse space for a variety of agricultural crops in local market. For several years the Department of Agriculture, Bureau of Markets, has been engaged in making surveys of warehousing in its relation

Digitized by Google

to the conservation of products and protection of crops as a safe basis for issuing collateral warehouse receipts.

The insufficiency of warehouses in producing centers of seasonal crops is largely due to the fact that they do not prove commercially profitable because of the idle investment between periods of crop movement. When the production of a commodity is seasonal but is consumed throughout the year, the greater the extent to which it is stored in the areas of production and the more evenly it moves to market throughout the year to meet market demand the greater will be the economy of distribution.

Digitized by Google

Chapter VI.

CONVERSION.

It is quite generally known that it costs more to sell and deliver the marketable products into which agricultural commodities are converted than to produce and manufacture them. However, it can not be generally realized, or greater efforts would be made to reduce the cost of marketing and distribution. On the basis of the vast operation of agriculture and business, a very slight improvement in methods might readily effect a saving of billions of dollars annually.

The existing system of distribution of manufactured goods is the result of a gradual adaptation of earlier methods, when needs were comparatively few and simple, when production, manufacture, and market were localized, and when each community was comparatively self-sustaining. In those days the farmer took his wheat to the mill and had it ground and took away flour and bran. As a matter of fact, practically all goods were custom made. The consumers could tell the manufacturer what they required and the manufacturer could convey to the producer information as to his needs of raw materials.

The methods were rather crude, in contrast with the highly specialized practices of the present time, but there was little misdirection of energy in the matter of distribution. There was, of course, considerable time consumed in bargaining, and manufacturing costs were higher because of lack of machinery and labor-saving devices, but the costs of distribution were low in comparison with the costs of manufacture.

There was little or no overproduction, and manufactured commodities were handled and delivered in bulk, and much of the manufacture was carried on in the home.

With this condition as a starting point, we have to take into consideration the rapid development of our country, the extension of transportation systems, and the industrial activities growing out of the development of our mineral and forest products. People engaged in these activities had to be fed, clothed, and sheltered. Every section of the continent came into development, and goods had to be transported long distances. Through immigration our population increased more rapidly than the manufacturer's ability to supply it without an improvement in manufacturing methods.

In response to this requirement, machinery was invented and labor-saving methods devised. The manufacturer had but two problems—to make and deliver. He turned over delivery to manufacturers' agents, wholesalers, jobbers, and other agencies that came into being in response to an indicated need of distributive service. For a considerable time the demand exceeded the capacity of manufacturers, and the entire effort was to devise improved methods of mechanical production.

Digitized by Google

Improved methods of manufacture through the replacement of hand labor with machinery increased the volume of production rapidly and at the same time decreased manufacturing costs. With increased production demand was more easily satisfied, with the result that the volume of production at times exceeded the normal requirement, and manufacturers found it necessary to create new demand; selling costs were then materially increased and greater effort was made to force goods through the channels of distribution.

By turning the problems of distribution over to other agencies the manufacturer lost his intimate touch with consumer needs and depended upon the wholesaler and the other agencies to reflect the probable consumer requirements. Under liberal governmental postal laws, fostering educational opportunity, monthly and weekly magazines and papers of wide circulation came into existence about 1880 and increased rapidly in number until about 1910. These magazines offered an opportunity for wide exploitation of manufactured goods. However, to realize a profitable return on advertising, it was necessary for the makers of goods to identify their products and guarantee satisfaction.

This led to increased branding and trade-marking of goods and packaging of foodstuffs. With the opportunity offered through widespread circulation of advertising mediums, there developed broadcast distribution of goods and a competition between manufacturers of parallel articles for national markets. This competition reflected itself in a further effort on the part of manufacturers to improve methods of manufacture and secure economies of large volume production. Competition was not confined, however, to production, but extended to the purchase of more advertising space in a larger number of publications and an increased selling effort of most intensive character.

In addition to the usual selling organizations calling upon the wholesalers, manufacturers organized specialty selling, in which they employed men to call upon retailers, distribute samples, and utilize such devices as would tend to compel retailers to purchase goods through the wholesaler. Each new selling device was adopted by competitive manufacturers, with the result that the distribution of manufactured goods became a competition of spending, until it developed a burden of distributive costs in excess of the value of the commodities distributed. However, consideration should be given to the fact that in the competition of identified goods there has developed a greater excellence, uniformity, convenience, hygienic protection of foodstuffs and a radical change in the living habits of the American people. It is apparent, however, that these advantages do not sufficiently compensate for the disproportionate cost of the distribution of necessities.

Chart B 1 on page 117 shows the distribution of the dollar received by the manufacturer from the wholesaler into cost of materials, cost of manufacture, operating expenses, and profit for eight groups of trade-marked food commodities:

Digitized by Google

Chart B 1.

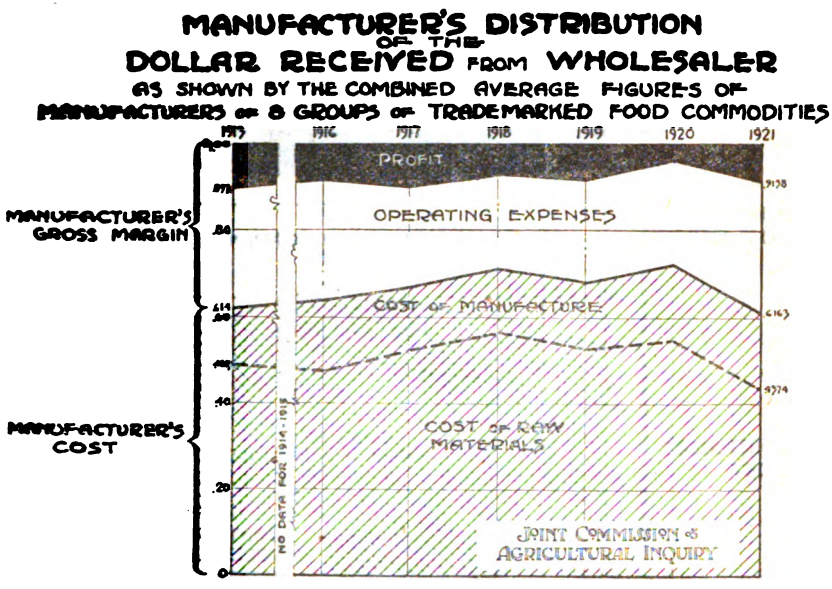

MANUFACTURER'S DISTRIBUTION OF THE DOLLAR RECEIVED FROM WHOLESALER
AS SHOWN BY THE COMBINED AVERAGE FIGURES OF MANUFACTURERS OF 8 GROUPS OF TRADEMARKED FOOD COMMODITIES
1915 1916 1917 1918 1919 1920 1921
PROFIT
OPERATING EXPENSES
COST OF MANUFACTURE
COST OF RAW MATERIALS
MANUFACTURER'S GROSS MARGIN
MANUFACTURER'S COST
NO DATA FOR 1914-1915
JOINT COMMISSION OF AGRICULTURAL INQUIRY

TABLE B1.—*Eight groups of trade-marked food commodities.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	48.09	47.52	52.65	56.49	52.77	54.61	43.74
Cost of manufacture	13.31	16.32	14.54	14.84	15.44	17.59	17.89
Total	61.40	63.84	67.19	71.33	68.21	72.20	61.63
Margin	38.60	36.16	32.81	28.67	31.79	27.80	38.37
Profit	10.24	8.86	10.16	7.23	8.45	3.94	8.62

Because trade-marked goods have to a degree an established value in the mind of the public, it is the tendency of the manufacturer to absorb out of profits increases in costs of material, operation, and distribution when such advances appear to be of temporary character; and there is a like tendency to absorb in profit such advantages as may be derived from reductions in cost of material, manufacture, and operation.

Charts B 2 to B 10 showing the manufacturer's distribution of the dollar the wholesaler pays for the merchandise are given for specified commodities on pages 118 to 126, inclusive.

Digitized by Google

Chart B 2.

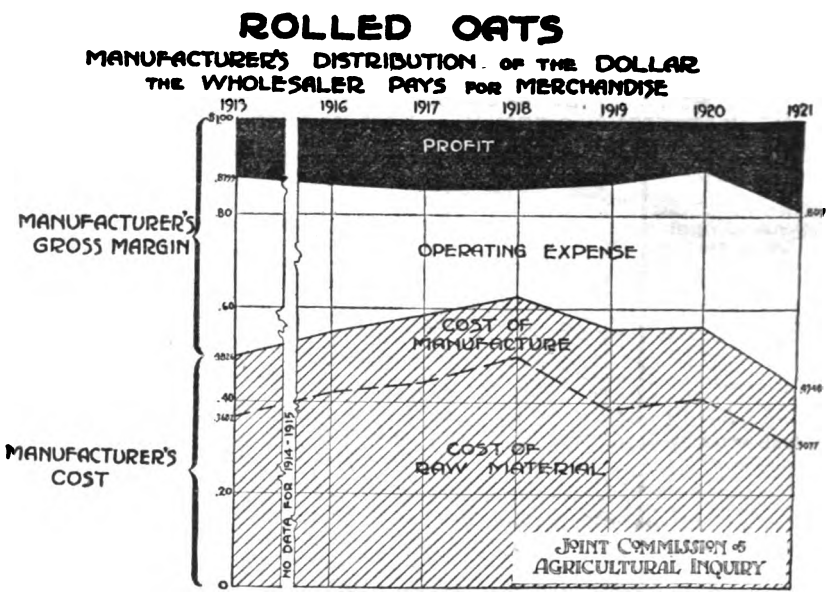


TABLE B2.—*Rolled oats.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	36.82	41.81	44.06	49.50	38.44	40.77	30.77
Cost of manufacture	11.44	12.97	14.62	13.20	17.32	15.88	12.71
Total	48.26	54.78	58.68	62.70	55.76	56.65	43.48
Margin	51.74	45.22	41.32	37.30	44.24	43.35	56.52
Profit	12.01	13.60	14.62	14.02	13.16	9.09	19.39

Digitized by Google

Chart B 3.

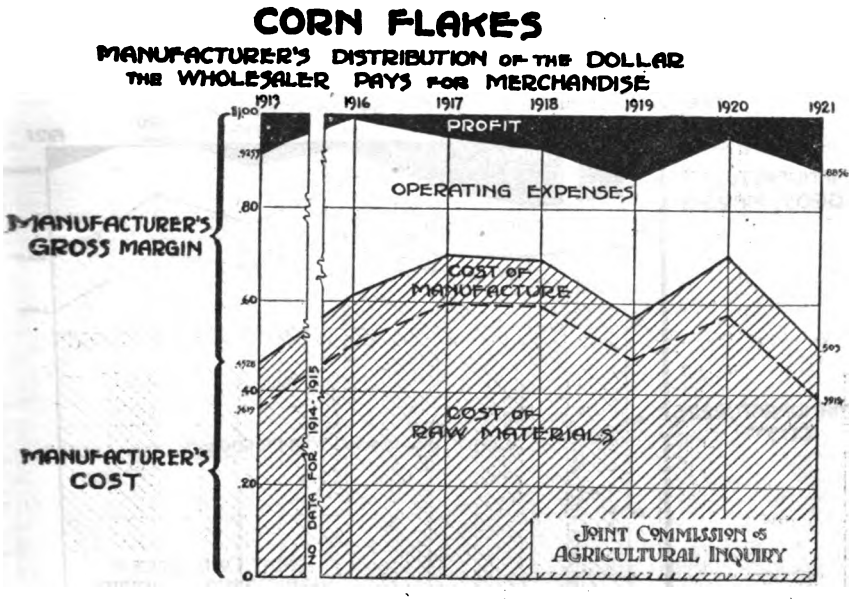


TABLE B 3.—*Corn flakes.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	36.19	50.51	59.34	59.28	47.94	57.49	39.19
Cost of manufacture	9.09	10.65	10.66	9.64	8.99	12.91	11.11
Total	45.28	61.16	70.00	68.92	56.93	70.40	50.30
Margin	54.72	38.84	30.00	31.08	43.07	29.60	49.70
Profit	7.47	.57	4.63	7.17	13.88	4.43	11.44

70678°—H. Rept. 408, pt. 4, 67-1——9

Digitized by Google

Chart B 4.

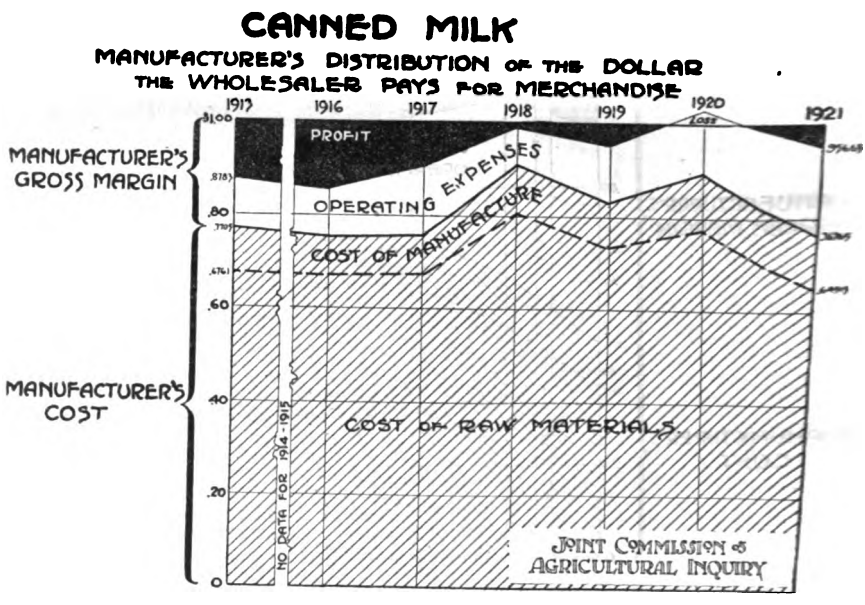


TABLE B 4.—*Canned milk.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	67.605	67.185	67.445	80.44	73.645	78.145	64.915
Cost of manufacture	9.145	8.475	8.095	10.33	9.67	12.24	11.85
Total	76.750	75.660	75.540	90.77	83.315	90.385	76.765
Margin	23.25	24.34	24.46	9.23	16.685	9.615	23.235
Profit	12.17	14.33	9.425	.71	4.83	[1] 3.145	4.335

[1] Loss.

Digitized by Google

Chart B 5.

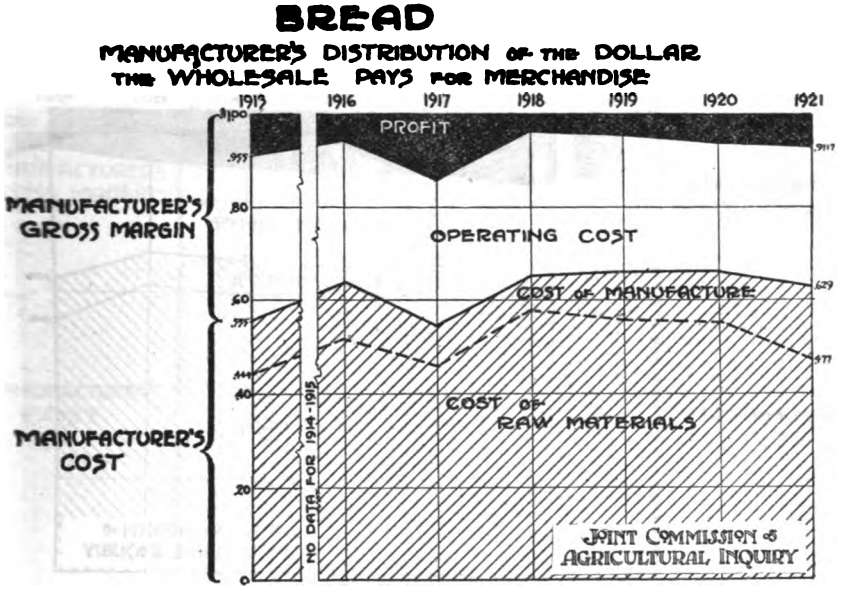


TABLE B 5.—*Bread.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	44.40	51.80	45.10	57.90	56.00	55.30	47.70
Cost of manufacture	26.70	23.30	22.00	21.40	22.10	19.70	25.90
Total	71.10	75.10	67.10	79.30	78.10	75.00	73.60
Margin	28.90	24.90	32.90	20.70	21.90	25.00	26.40
Profit	8.90	5.60	14.10	3.60	4.40	9.09	7.10

Digitized by Google

Chart B 6.

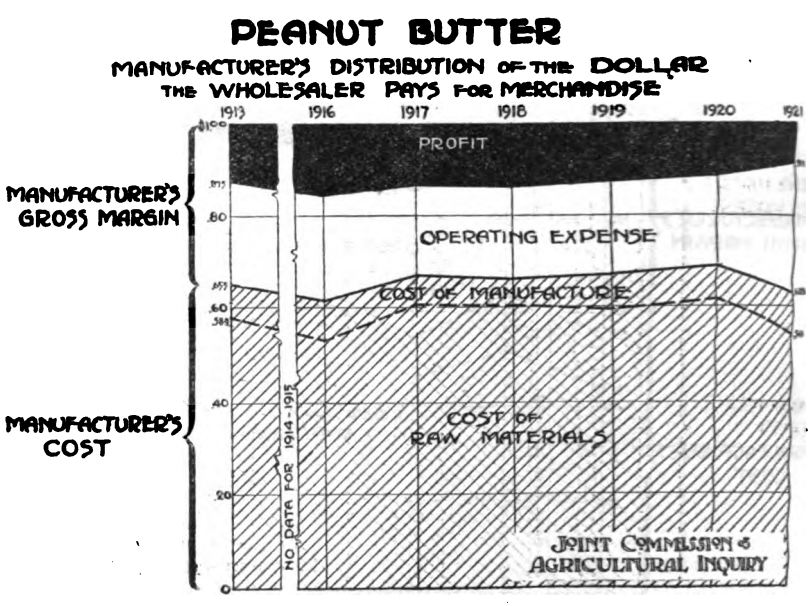


TABLE B 6.—*Peanut butter.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	58.40	53.60	60.80	60.50	59.80	61.40	54.10
Cost of manufacture	7.10	8.60	6.20	5.60	7.30	7.20	8.70
Total	65.50	62.20	67.00	66.10	67.10	68.60	62.80
Margin	34.50	37.80	33.00	33.90	32.90	31.40	37.20
Profit	12.50	15.60	13.50	14.00	12.60	11.80	8.90

Digitized by Google

Chart B 7.

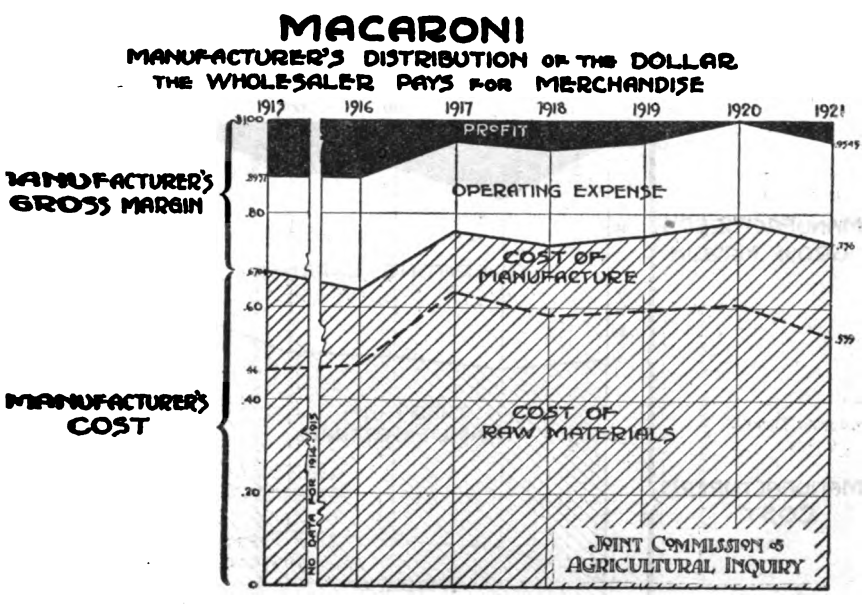


TABLE B 7.—*Macaroni.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	46.00	47.75	63.17	58.06	59.54	60.56	53.90
Cost of manufacture	21.04	16.13	13.13	15.18	15.70	18.23	19.70
Total	67.04	63.88	76.30	73.24	75.24	78.79	73.60
Margin	32.96	36.12	23.70	26.76	24.76	21.21	26.40
Profit	10.28	12.32	4.88	6.15	4.87	.....	4.55

Digitized by Google

Chart B 8.

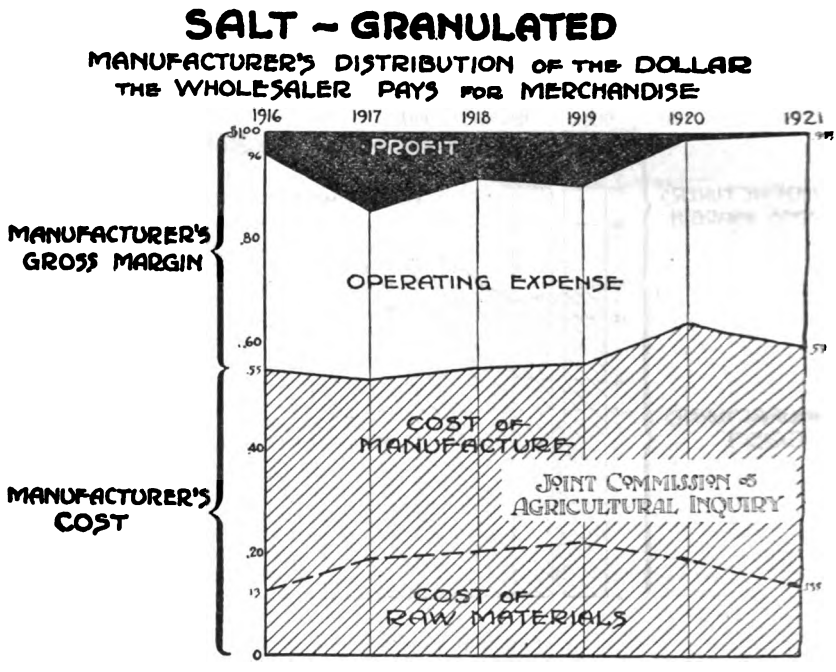


TABLE B 8.—*Salt.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material		13.00	19.00	20.00	22.00	19.00	13.50
Cost of manufacture		42.00	34.00	35.00	34.00	45.00	45.50
Total		55.00	53.00	55.00	56.00	64.00	59.00
Margin		45.00	47.00	45.00	44.00	36.00	41.00
Profit		4.00	15.00	9.00	10.00	1.00	.50

Digitized by Google

Chart B 9.

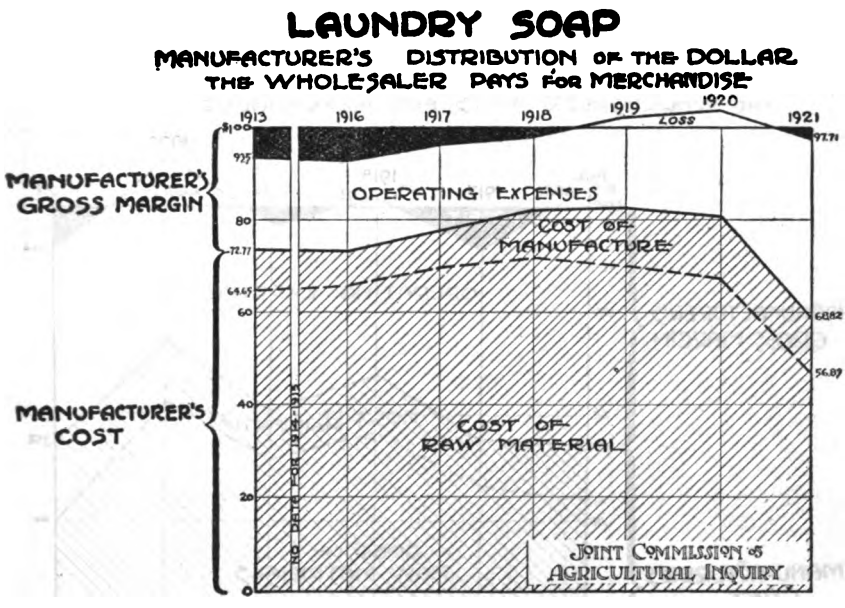


TABLE B 9.—*Laundry soap.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	64. 65	65. 60	69. 37	71. 62	69. 96	67. 11	56. 83
Cost of manufacture	8. 12	7. 45	10. 41	10. 22	12. 21	13. 43	11. 99
Total	72. 77	73. 05	79. 78	81. 84	82. 17	80. 54	78. 82
Margin	27. 23	26. 95	20. 22	18. 16	19. 56	22. 94	21. 18
Profit	6. 50	7. 36	3. 99	2. 29	[1] 1. 73	[1] 3. 48	2. 29

[1] Loss.

Digitized by Google

Chart B 10.

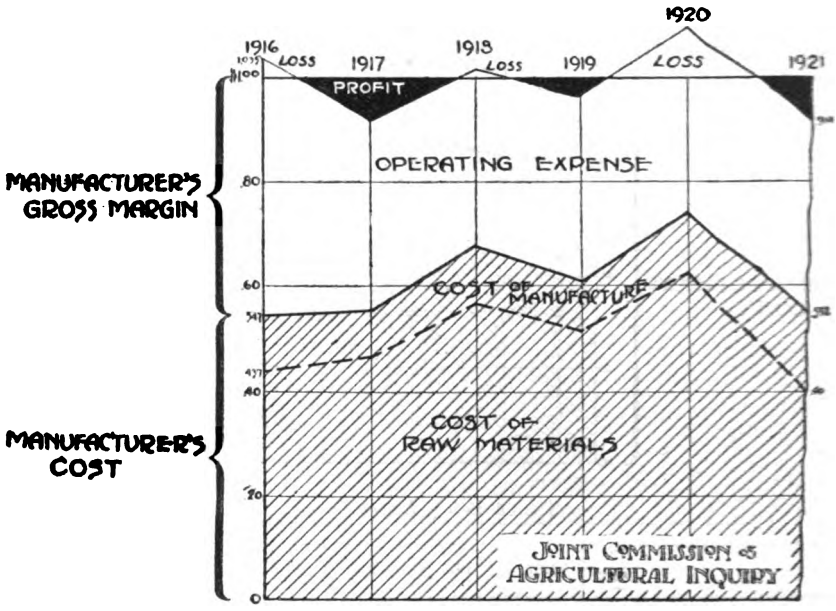


TABLE B 10.—*Soap powder.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material		43.70	46.70	56.60	51.40	62.00	40.80
Cost of manufacture		11.00	8.80	11.00	9.30	11.70	15.20
Total		54.70	55.50	67.60	60.70	73.70	55.20
Margin		45.30	44.50	32.40	39.30	26.30	44.80
Profit		[1] 3.50	8.50	[1] 1.20	3.50	[1] 9.50	8.80

[1] Loss.

A detailed analysis of the distribution which the manufacturers of eight groups of trade-marked food commodities make of the dollar received from the wholesaler for products and the fluctuation in selling price for the years 1913, 1916, 1917, 1918, 1919, 1920, and 1921 are shown in chart B 11 on page 128.

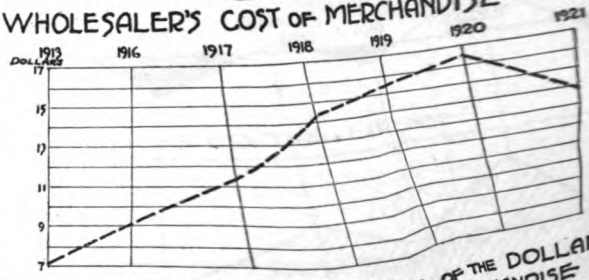
Digitized by Google

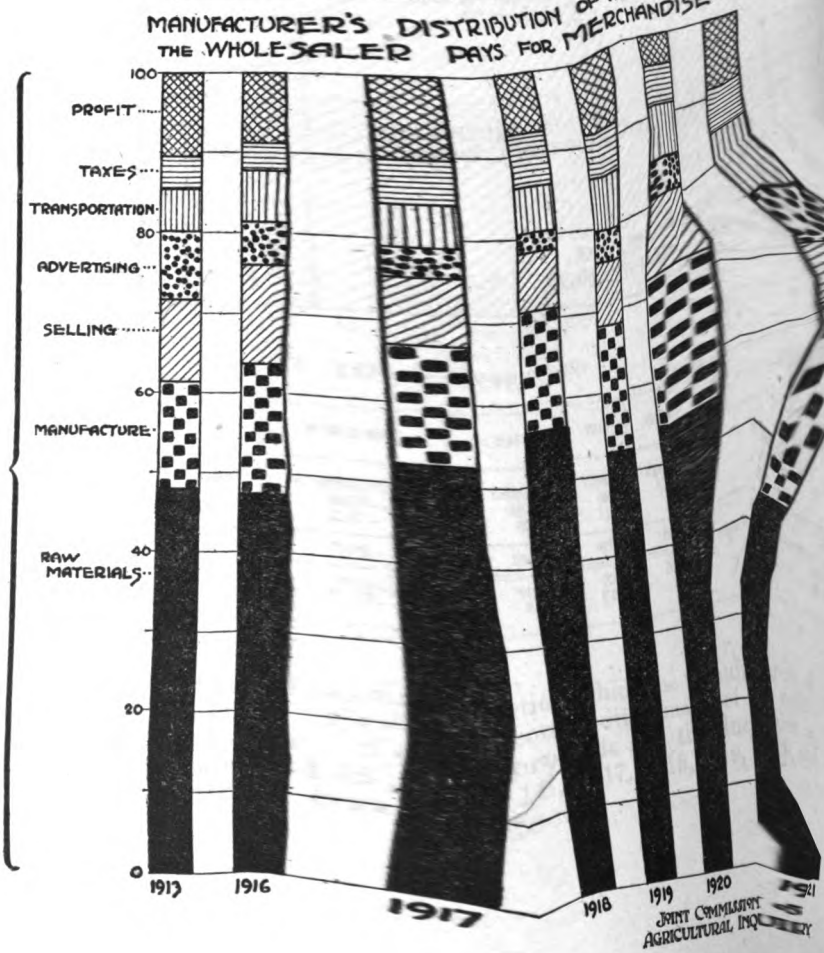
Digitized by Google

Chart B 11.

MANUFACTURER'S DISTRIBUTION OF THE DOLLAR RECEIVED FROM WHOLESALER

AS SHOWN BY THE COMBINED AVERAGE FIGURES OF MANUFACTURER'S OF 8 GROUPS OF TRADE MARKED FOOD COMMODITIES





Digitized by Google

TABLE B 11.—*Distribution of the dollar received by the manufacturers of eight selected food commodities.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	48.09	47.52	52.65	56.49	52.77	54.61	43.74
Cost of manufacture	13.31	16.32	14.54	14.84	15.44	17.59	17.89
Selling	10.39	12.25	8.28	7.05	7.70	8.46	10.21
Advertising	8.49	5.35	3.74	2.39	3.99	4.29	4.77
Transportation	5.31	6.38	5.22	5.41	6.38	6.19	8.76
Taxes	4.17	3.32	5.41	6.59	5.27	4.92	6.09
Net profit	10.24	8.86	10.16	7.23	8.45	3.94	8.62
Selling price	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Chart B11 shows the results obtained from hundreds of questionnaires involving thousands of computations and reflects the distributive situation of the entire United States. The charts and tables included in this chapter are of particular interest because they indicate that the majority of manufacturers of essential food commodities are facing common problems of great importance, not only to the industry involved, but to the entire public.

In 1921 the cost of materials dropped 10.87 cents out of the dollar of sales under the cost of the previous year, while the cost of manufacture increased 0.3 cents, the cost of selling 1.75 cents, the cost of advertising 0.48 cents, the cost of transportation 2.57 cents, and cost of tax 1.17 cents, leaving a gain of 4.68 cents. The gain was absorbed in the profit for the year.

During the war period, 1917 and 1918, and during the year following the war, the cost of selling and advertising was considerably modified by the fact that the demands from the Government for food for the Army and from the populations of the Allies created a degree of shortage in our own country which is reflected in the steadily rising prices and decreased cost of distribution. The cost of the materials entering into the production of 1920 and the cost of manufacture showed an increase, as did selling, advertising, and transportation. That these additional costs were to some degree absorbed by the manufacturer is indicated in a reduced profit in 1920.

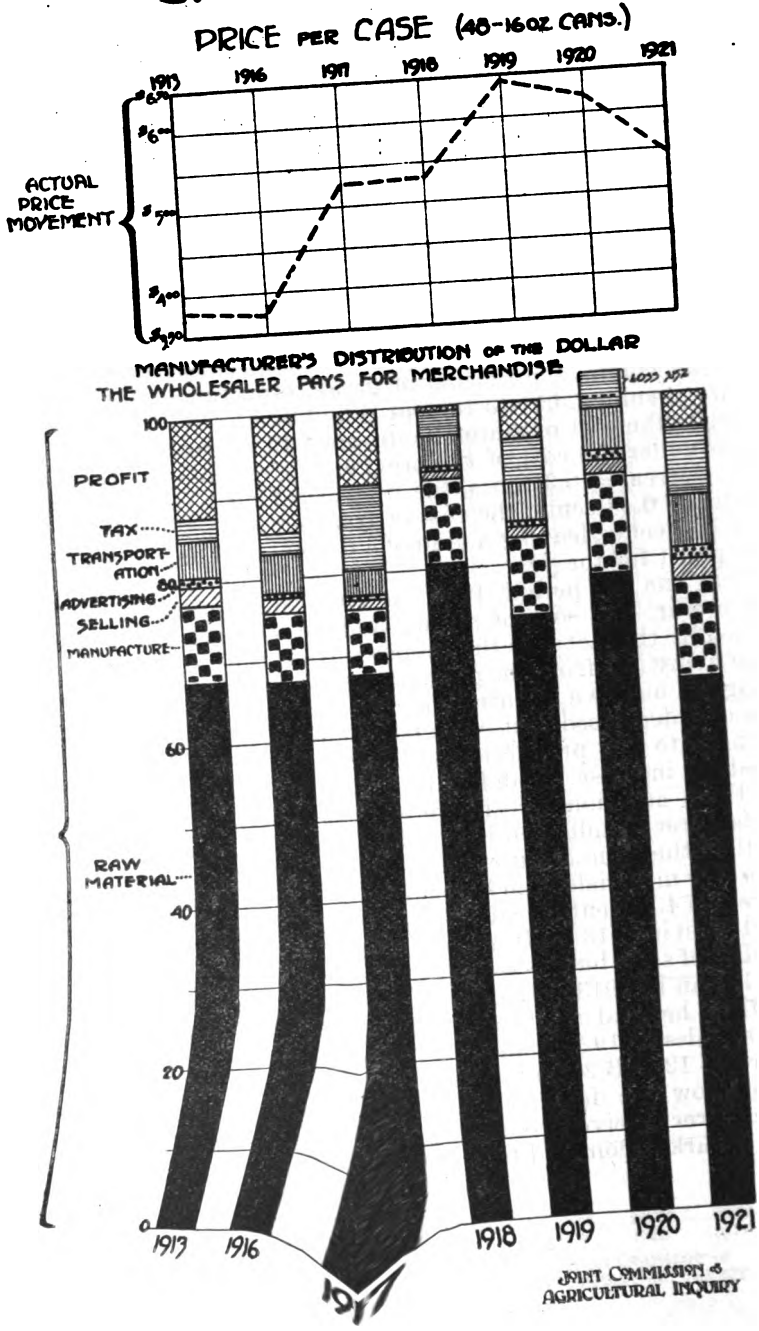
In 1921 the manufacturer was paying 4.35 cents per dollar of sales less for raw materials than he paid in 1913; however his cost of manufacture was 4.58 cents greater. His selling expense was 0.18 cents less in 1921 than in 1913. His advertising expenditure was 3.72 cents less per dollar of sales but his cost of transportation was 3.45 cents greater in 1921 than in 1913. His taxes had increased in 1921 to 1.92 cents more than he paid in 1913, while his profit was 1.62 cents less per dollar of sales in 1921 than in 1913.

Charts B 12 to B 20 and tables B 12 to B 20, on pages 130 to 147, inclusive, show the detail of the distribution of the dollar which the manufacturer receives from the wholesaler for each of several groups of trade-marked commodities:

Digitized by Google

Chart B 12.

CANNED MILK



Digitized by Google

TABLE B 12.—*Distribution of canned milk manufacturer's dollar.*

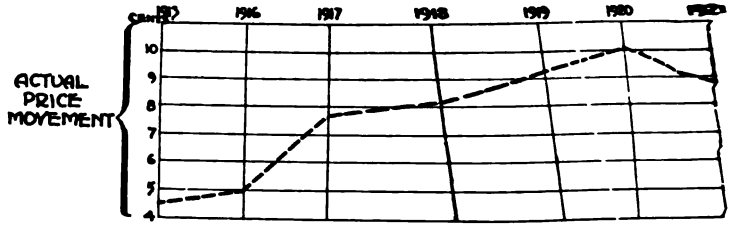
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
t of raw material	67.605	67.185	67.445	80.44	73.645	78.145	64.915
nufacture	9.145	8.475	8.095	10.33	9.67	12.24	11.85
ing	2.27	1.9	1.17	1.11	1.245	1.77	2.68
ertising	1.14	.565	.34	.60	.58	1.22	1.69
nsportation	4.58	4.905	3.13	3.825	4.695	5.11	6.28
es	2.79	2.64	10.395	2.985	5.335	4.66	8.25
it	12.17	14.33	9.425	.71	4.83	3.145	4.335

Digitized by Google

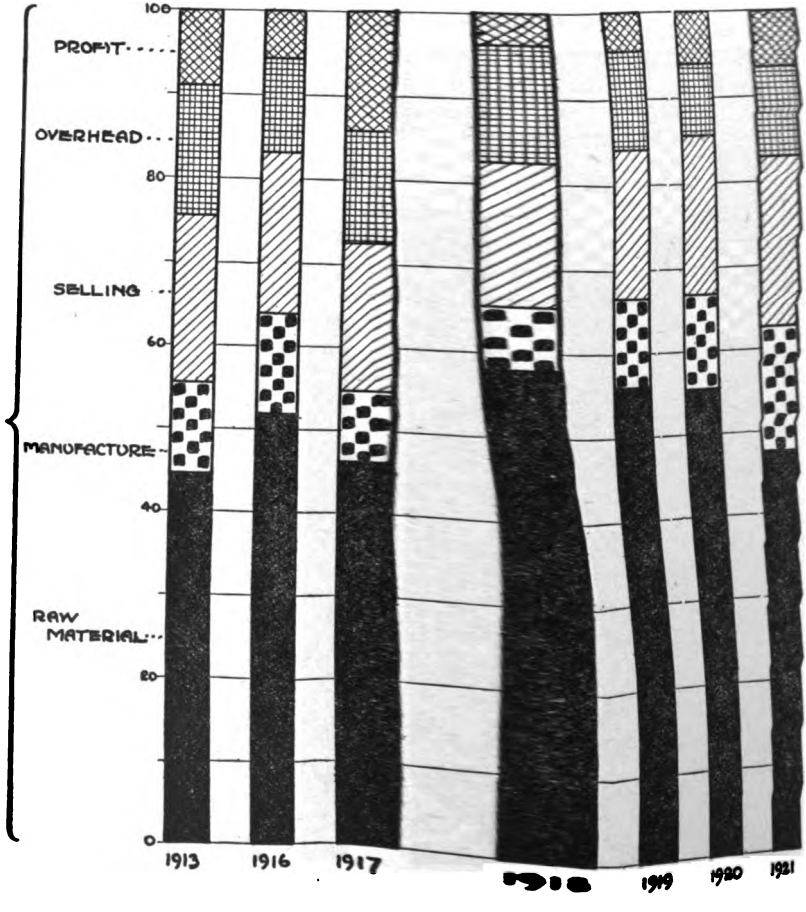
Chart B 13.

BREAD

PRICE TO RETAILER PER POUND LOAF



MANUFACTURER'S DISTRIBUTION OF THE DOLLAR THE RETAILER PAYS FOR MERCHANDISE



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

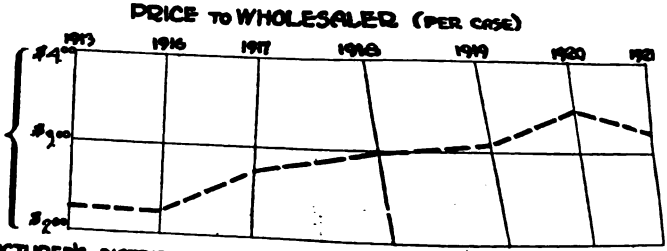
TABLE B 13.—*Distribution of bread manufacturer's dollar.*

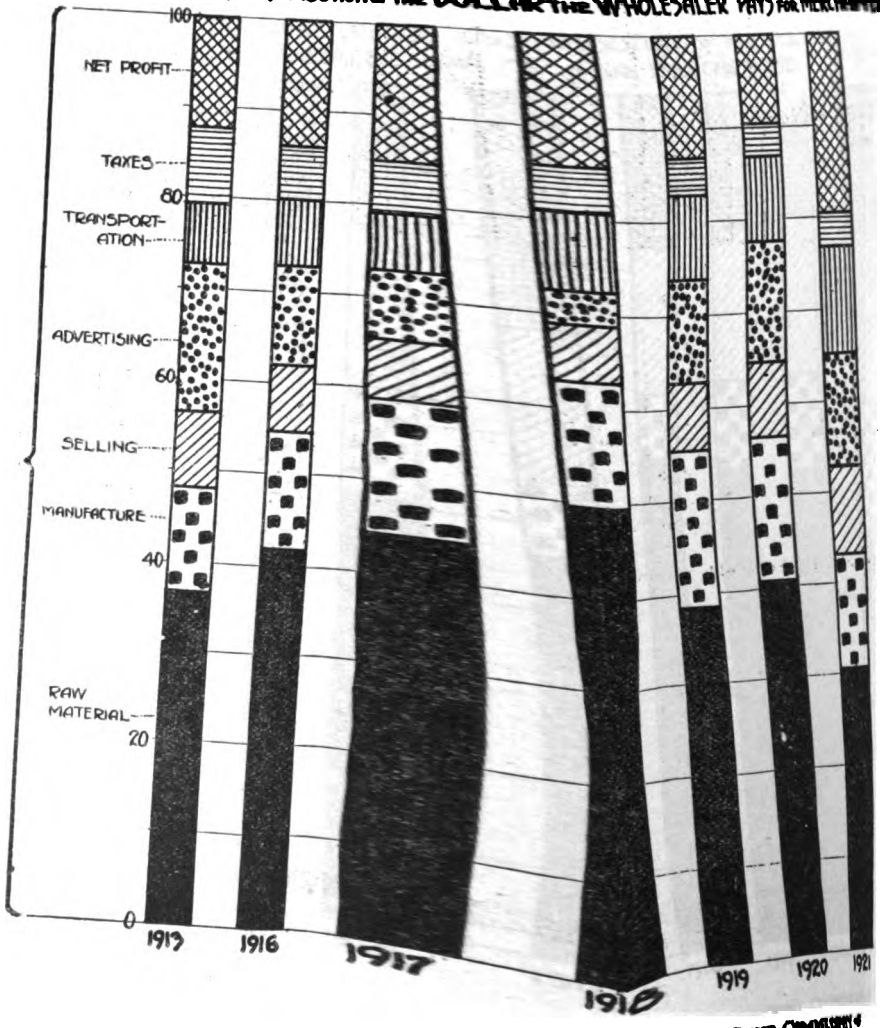
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
ost of raw material	44.40	51.80	46.10	57.90	56.00	55.30	47.70
anufacture	26.70	23.30	22.00	21.40	22.10	19.70	25.90
elling	20.00	19.30	17.70	17.20	17.60	18.90	20.20
rofit	8.90	5.60	3.60	3.60	4.40	6.00	7.10

Digitized by Google

Chart B 14.

ROLLED OATS





JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE B 14.—*Distribution of rolled oats manufacturer's dollar.*

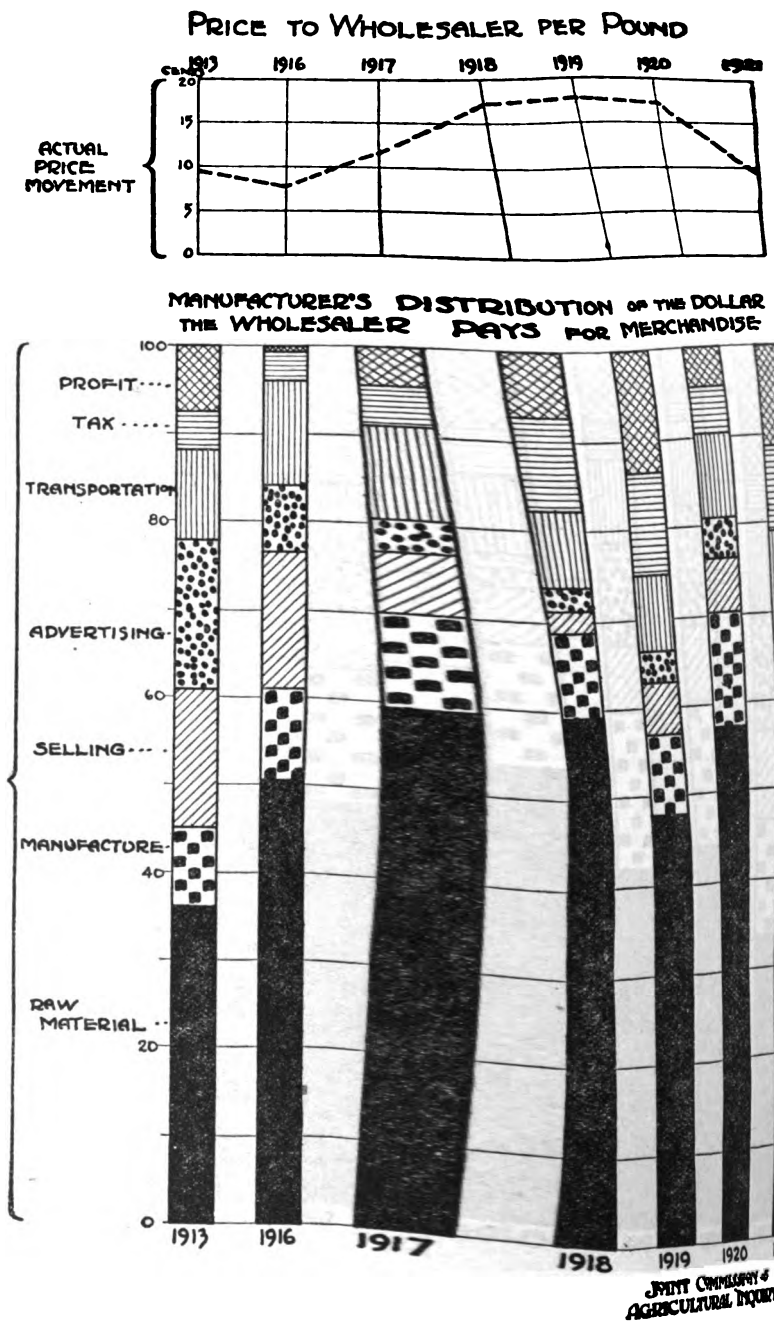
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
st of raw material	36.82	41.81	44.06	49.50	38.44	40.77	30.77
nufacture	11.44	12.97	14.62	13.20	17.32	15.88	12.71
ling	8.32	7.28	6.63	6.16	7.02	8.30	9.50
lvertising	16.42	10 98	8.43	3.68	11.01	13.28	12.31
ansportation	6.85	7.48	6.32	8.40	9.02	9.33	11.58
xes	8.14	5.88	5.33	5.04	4.03	3.35	3.74
ofit	12.01	13.60	14.62	14.02	13.16	9.09	19.30

70678°—H. Rept. 408, pt. 4, 67–1——10

Digitized by Google

Chart B 15.

CORN FLAKES



Digitized by Google

TABLE B 15.—*Distribution of corn flakes manufacturer's dollar.*

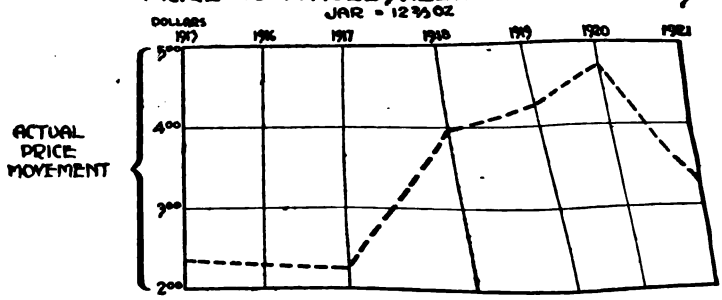
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	36.19	50.51	59.34	59.28	47.94	57.49	39.19
Manufacture	9.09	10.65	10.66	9.64	8.99	12.91	1 .11
Selling	15.62	15.52	6.95	2.40	5.79	6.07	10.00
Advertising	17.02	7.77	3.83	2.69	3.43	4.60	6.16
Transportation	10.28	11.93	10.05	8.60	8.56	9.34	12.51
Taxes	4.33	3.05	4.54	10.22	11.42	5.16	9.57
Profit	7.47	.57	4.63	7.17	13.88	4.43	11.44

Digitized by Google

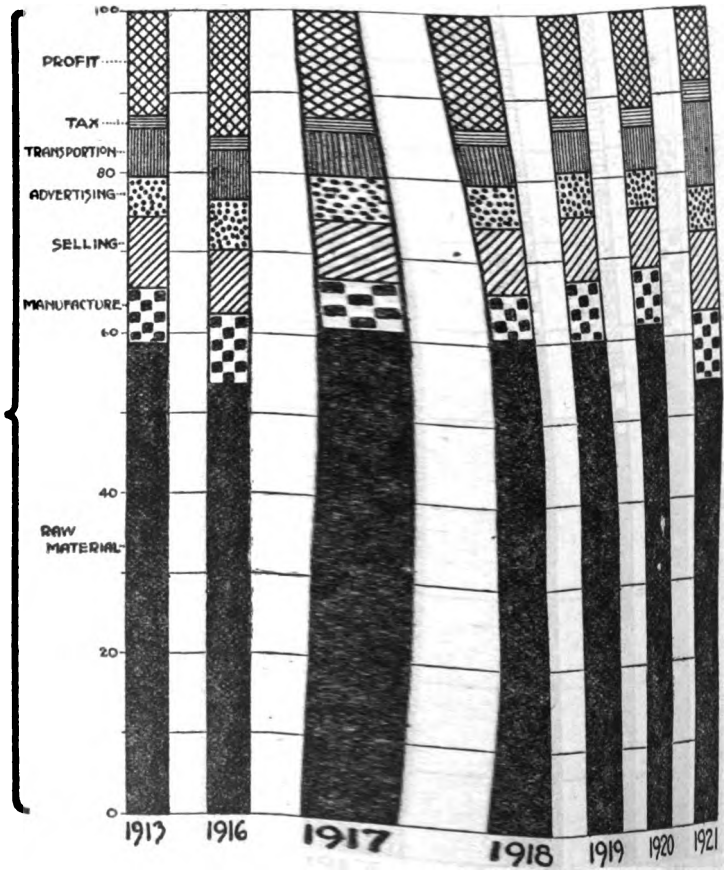
Chart B 16.

PEANUT BUTTER

PRICE TO WHOLESALER PER DOZ. JARS



MANUFACTURER'S DISTRIBUTION OF THE DOLLAR THE WHOLESALER PAYS FOR MERCHANDISE



JOINT COMMITTEE ON AGRICULTURAL INQUIRY

Digitized by Google

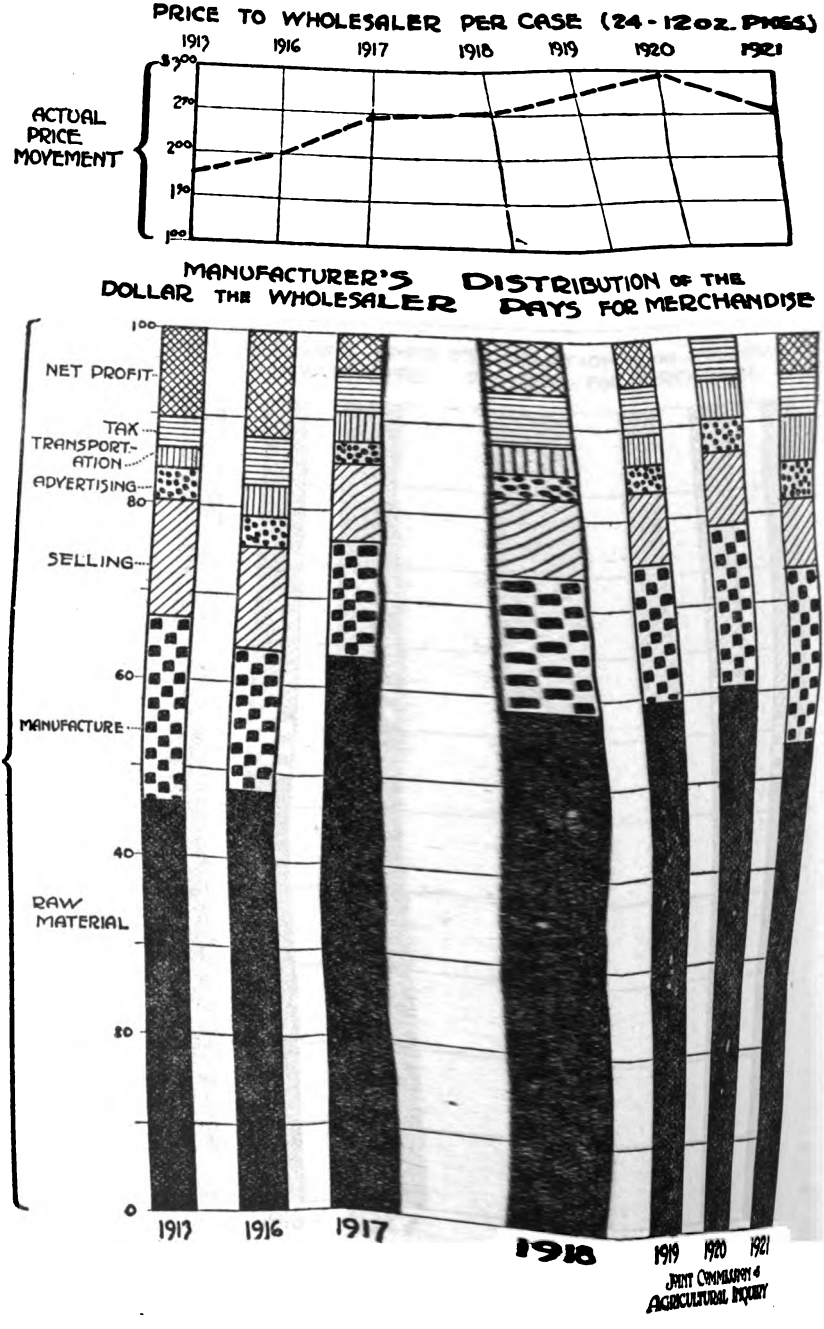
TABLE B 16.—*Distribution of peanut butter manufacturer's dollar.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
t of raw material	58.40	53.60	60.80	60.50	59.80	61.40	54.10
nufacture	7.10	8.60	6.20	5.60	7.30	7.20	8.70
ling	8.90	8.00	7.30	8.00	7.90	7.40	9.70
vertising	4.90	6.30	5.40	5.10	5.40	4.70	5.40
ansportation	6.90	6.30	5.30	5.10	5.40	5.20	10.50
xes	1.30	1.60	1.50	1.70	1.60	2.30	2.70
ofit	12.50	15.60	13.50	14.00	12.60	11.80	8.90

Digitized by Google

Chart B 17.

MACARONI



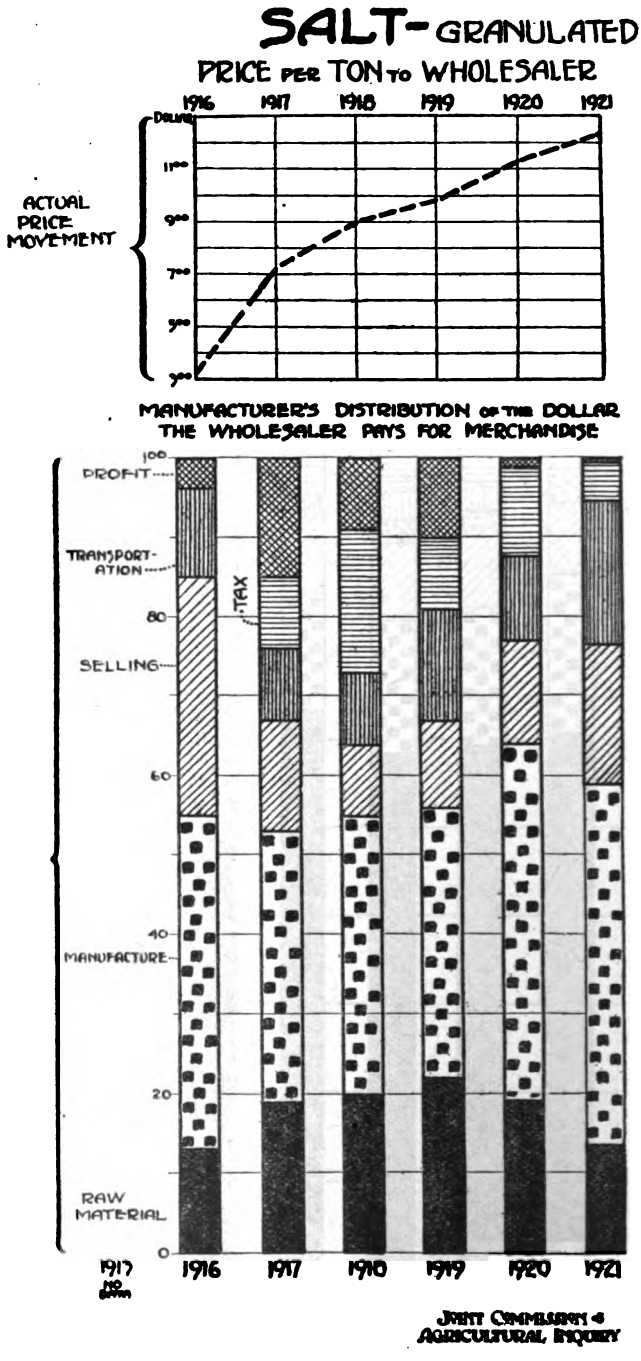
Digitized by Google

TABLE B 17.—*Distribution of macaroni manufacturer's dollar.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
st of raw material	46.00	47.75	63.17	58.06	59.54	60.56	53.90
anufacture	21.04	16.13	13.13	15.18	15.70	18.23	19.70
lling	13.25	11.73	8.83	8.83	8.06	8.35	7.68
dvertising	3.775	3.63	2.39	2.86	3.00	3.81	4.12
ransportation	2.37	3.23	3.02	3.06	3.38	4.10	5.13
axes	3.74	5.22	4.58	5.86	5.44	4.95	4.91
roft	10.23	12.32	4.88	6.15	4.87	.....	4.55

Digitized by Google

Chart B 18.



Digitized by Google

TABLE B 18.—*Distribution of salt manufacturer's dollar.*

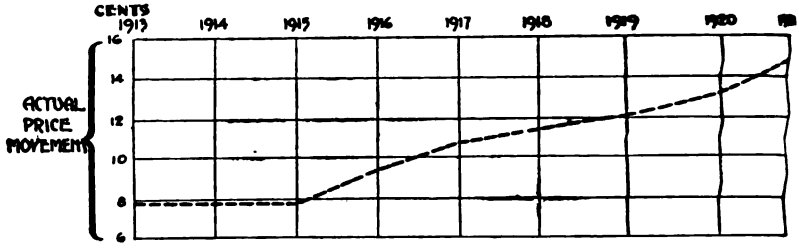
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
ost of raw material		13.00	19.00	20.00	22.00	19.00	13.50
anufacture		42.00	34.00	35.00	34.00	45.00	45.50
elling		30.00	14.00	9.00	11.00	13.00	17.50
ransportation		11.00	9.00	9.00	14.00	10.50	18.00
axes			9.00	18.00	9.00	11.50	5.00
roft		4.00	15.00	9.00	10.00	1.00	.50

Digitized by Google

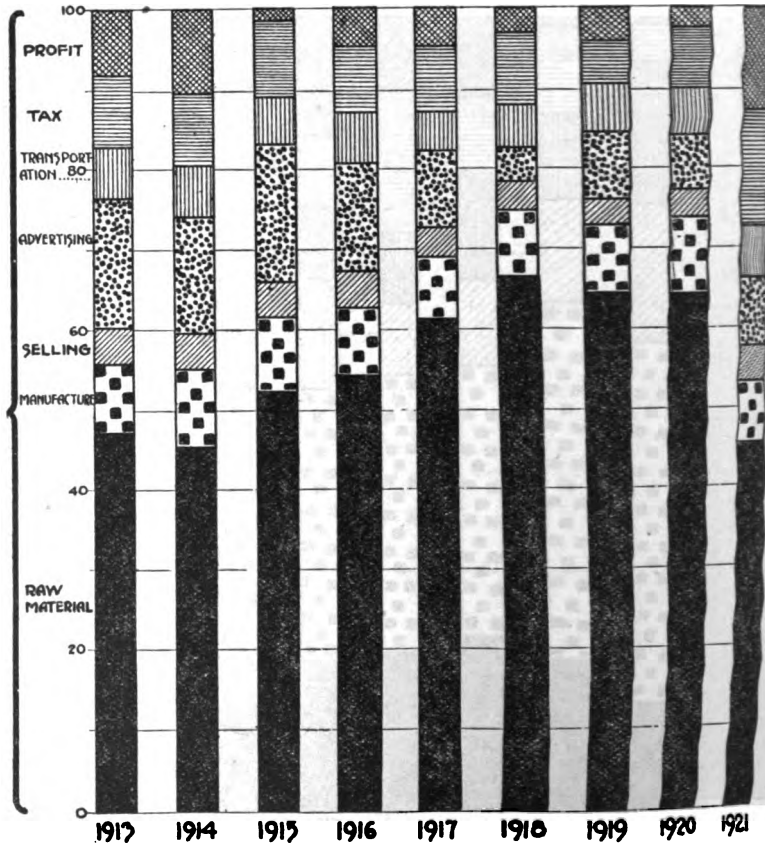
Chart B 19.

WHEAT CEREAL

PRICE TO WHOLESALER PER POUND



MANUFACTURER'S DISTRIBUTION OF THE DOLLAR THE WHOLESALER PAYS FOR MERCHANDISE



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE B 19.—*Distribution of wheat cereal manufacturer's dollar.*

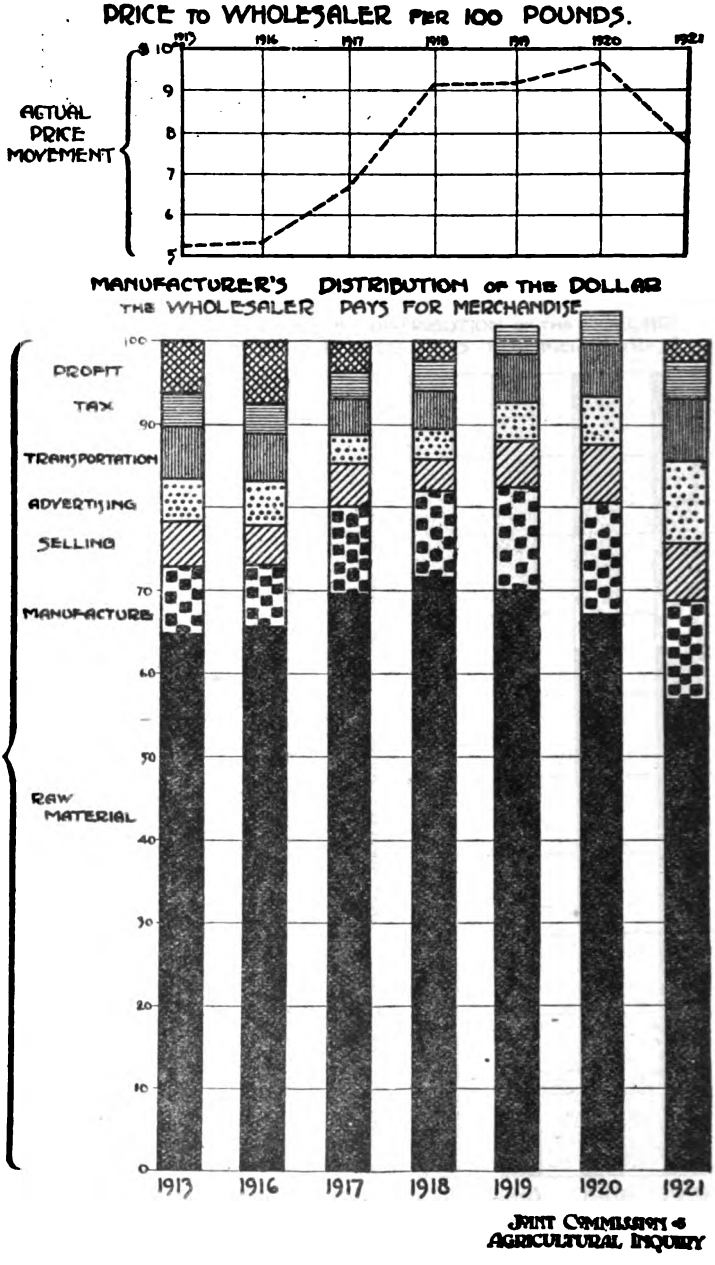
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
ost of raw material		43.7	46.70	56.60	51.40	62.00	40.00
lanufacture		11.00	8.80	11.00	9.30	11.70	15.20
elling		18.70	17.70	13.30	17.30	16.70	14.90
dvertising		16.00	9.40	9.00	7.80	9.00	6.90
ransportation		8.30	5.20	7.20	6.30	5.40	7.40
rofit		3.50	8.40	[1] 1.20	3.50	[1] 9.50	8.60

[1] Loss.

Digitized by Google

Chart B 20.

LAUNDRY SOAP



Digitized by Google

TABLE B 20.—*Distribution of laundry-soap manufacturer's dollar.*

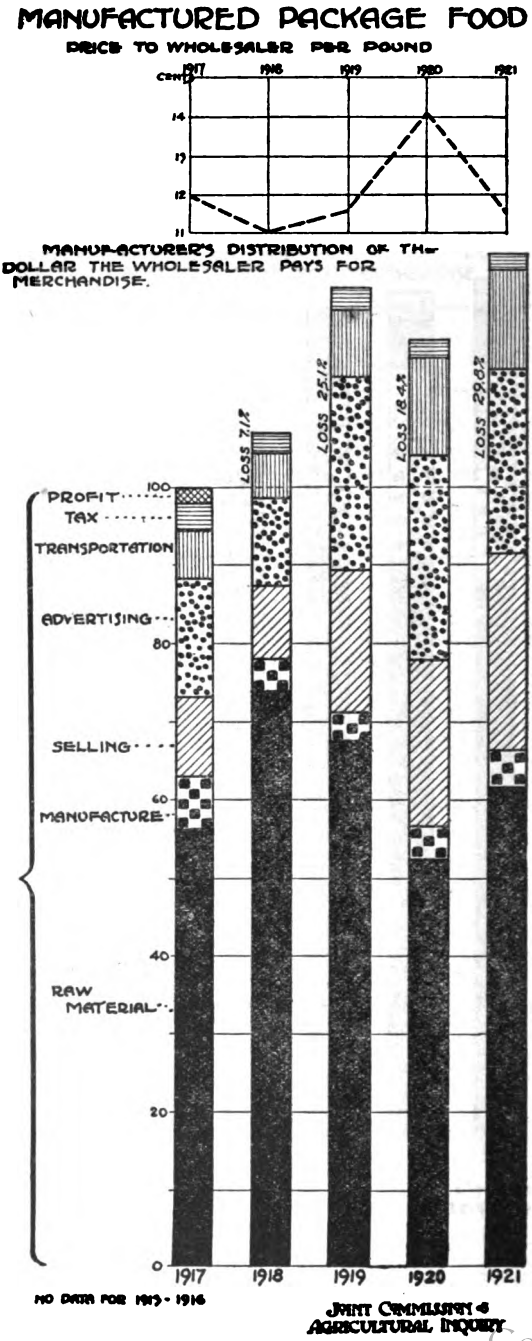
	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
[illegible] of raw material	64.65	65.60	69.37	71.62	69.96	67.11	56.83
[illegible]anufacture	8.12	7.45	10.41	10.22	12.21	13.43	11.99
[illegible]illing	5.32	4.81	5.06	3.91	5.86	6.97	6.86
[illegible]dvertising	5.18	5.21	3.52	3.60	4.63	5.93	9.86
[illegible]ransportation	6.11	5.85	4.25	4.87	5.84	6.12	7.58
[illegible]axes	4.12	3.72	3.41	3.49	3.53	3.92	4.59
[illegible]rofit	6.50	7.36	3.99	2.29	[1] 1.73	[1] 3.48	2.29

[1] Loss.

Digitized by Google

In contrast with chart B 11 on page 128, presenting the combined average figures for eight groups of trade-marked food commodities, Chart B 21 on this page and table B 21 on page 149 show, over a period of five years, a manufacturer's endeavor to secure a widespread market for his trade-marked food products:

Chart B 21.



Digitized by Google

TABLE B 21.—*Manufactured food product.*

	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of raw material	56.20	73.70	67.30	52.10	61.60
Manufacture	6.80	4.40	3.80	4.20	4.86
Selling	10.20	9.40	18.10	21.30	25.10
Advertising	15.10	11.10	24.80	26.10	23.80
Transportation	6.20	5.70	8.30	12.10	12.70
Taxes	3.70	2.70	2.90	2.60	1.90
Profit	1.90	[1] 7.10	[1] 25.10	[1] 18.40	[1] 29.80

[1] Loss.

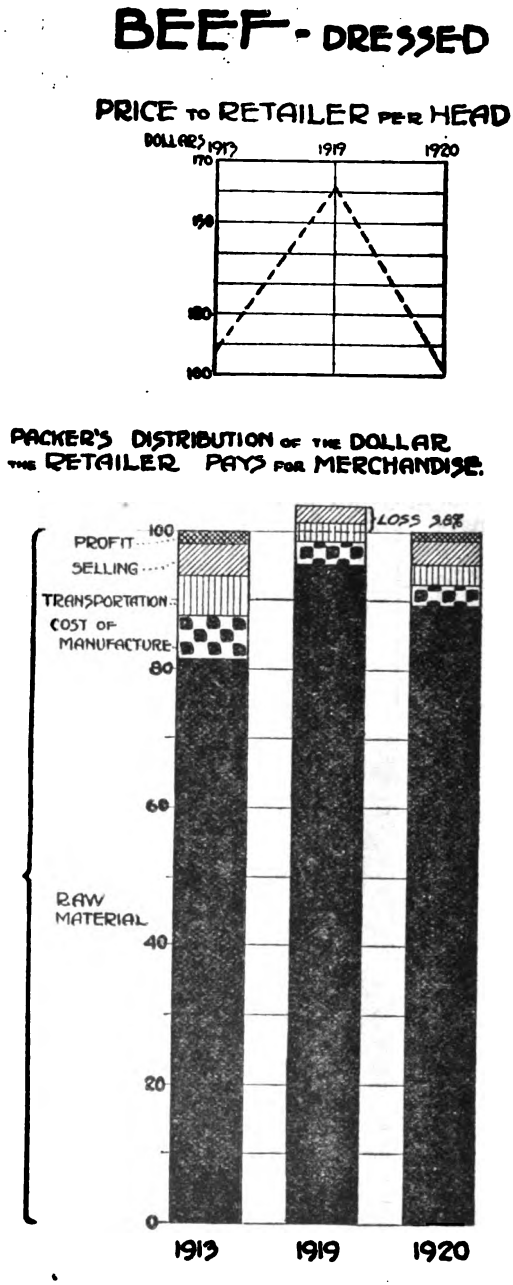
Chart B 21 is used as an example of the extravagance too frequently displayed by manufacturers who determine to capture a market through sheer weight of money and energy, and to force merchandise through the channels of distribution. This manufacturer is endeavoring to create a demand for a product in a market that is already supplied with similar commodities of established reputation. In an extremely competitive market, which apparently is fully satisfied with the existing brands, the effort is to secure a portion of the established market through a determined expenditure of money in advertising and selling. This leads to an increased expenditure on the part of other manufacturers to protect their established markets; distribution effort becomes simply an offensive and defensive display of extravagant spending.

Digitized by Google

DRESSED BEEF.

Chart B 22 on this page shows the packer's distribution of the dollar the retailer pays for dressed beef:

Chart B 22.



Digitized by Google

TABLE B 22.—*Dressed beef.*

	August.		
	1913	1919	1920
	Cents.	*Cents.*	*Cents.*
Per head, live cost	89.58	95.15	81.50
Packing-house expense	3.20	3.44	6.24
Transportation	2.80	2.77	5.87
Selling expense	3.36	2.43	4.73
Gross cost	98.94	103.79	98.34
Sold for	100.00	100.00	100.00
Profit	1.06	[1] 3.79	1.66

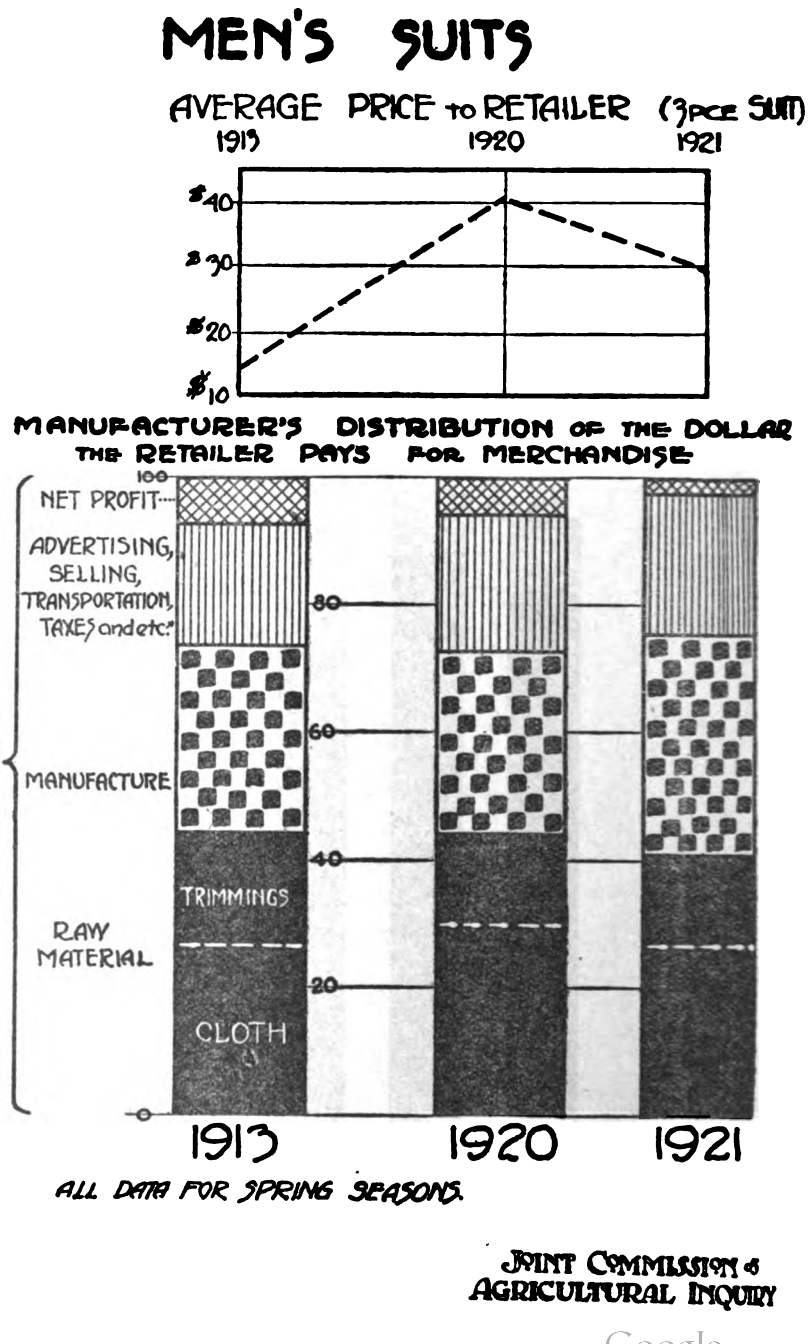
[1] Loss.

70678°—H. Rept. 408, pt. 4, 67-1——11

Digitized by Google

Chart B 23 on this page shows the clothing manufacturer's distribution of the dollar received from the retailer for clothing for the years 1913, 1920, and 1921:

Chart B 23.



Digitized by Google

TABLE B 23.—*Manufacturer's distribution of retailer's dollar for clothing.*

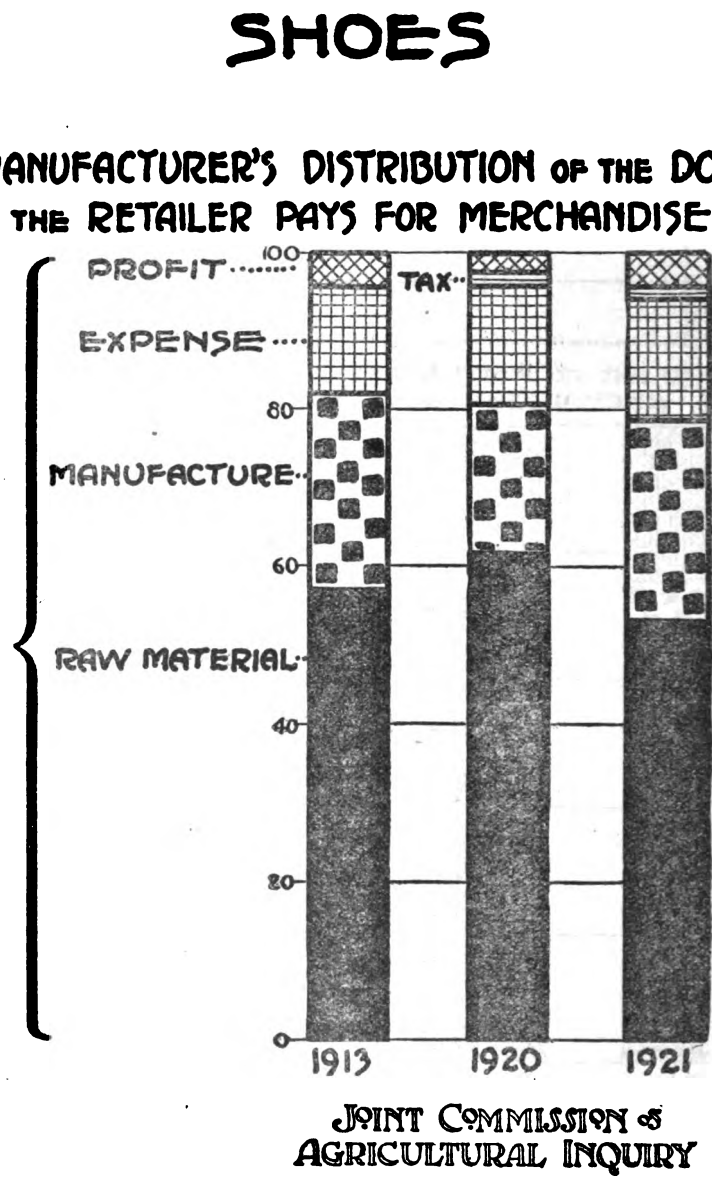
	1913	1920	1921
	Cents.	*Cents.*	*Cents.*
of raw material	26.60	30.60	26.70
of trimmings	17.80	13.50	14.80
ufacture	29.30	28.50	34.20
rhead	19.00	21.60	22.10
it	7.40	5.90	2.20

Digitized by Google

During the period from 1913 to 1920 a typical suit of men's clothes advanced from $15 to $41 and by the end of 1921 had dropped back to $29 at wholesale.

Chart B 24 shows the shoe manufacturer's distribution of the dollar the retailer pays for shoes:

Chart B 24.



Digitized by Google

TABLE B 24.—*Shoe manufacturer's distribution of retailer's dollar.*

	1913	1920	1921
	Cents.	*Cents.*	*Cents.*
of raw material	57.20	61.80	53.80
ufacture	25.00	19.00	25.50
-head	13.60	15.20	15.30
ral tax	.....	1.60	1.20
it	4.30	2.40	4.20

The manufacturers of trade-marked clothing and shoes have a large measure discontinued the distribution of their products rough wholesalers, and now perform that function in addition to at of manufacture.

The fact that a manufacturer may distribute his own products to ie retailer does not eliminate the cost of performing wholesale inctions. In certain instances a manufacturer can perform the rvices that attach to his particular line more economically and iore satisfactorily than a wholesaler can. In other instances, how-ver, distribution can be performed by the wholesaler more effectively nd efficiently and with greater economy than by the manufacturer.

Digitized by Google

Chapter VII.

DISTRIBUTION.

WHOLESALING.

It is the wholesaler's function to carry reserve stock for retailers within a radius of economic distribution and convenience of service. With a few exceptions, food products are distributed by manufacturers to wholesalers, then to retailers. Chart C1 on page 157 shows the wholesale grocer's stock investment, gross operating margin, frequency of stock turn, and apparent idle investment in surplus stock for the years 1913 and 1916–1921. There is every indication that wholesale grocers can modify the cost of operation by developing a greater frequency of stock turn.

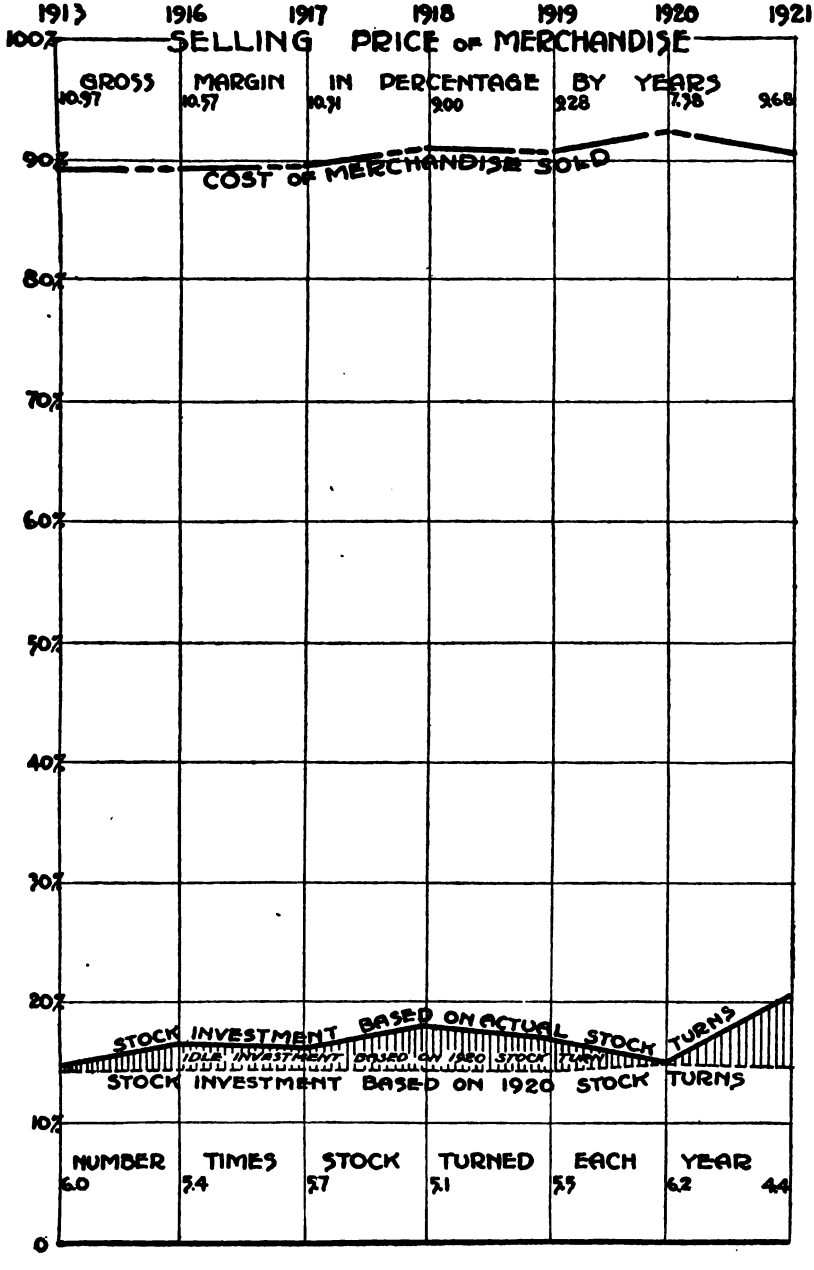
In 1913 the wholesale grocer had an average stock turn of 6 times; 1916, 5.4; 1917, 5.7; 1918, 5.1; 1919, 5.5; and in 1920, the period of greatest turnover shown in the commission's survey, the stock turn was 6.2. The gross margin of operating expense in 1920 was 8.52 cents, of which 1.14 cents was loss, leaving a margin of 7.38 cents against the dollar of sales. Nineteen hundred twenty-one showed a return to a condition of stock surplus larger than either of the preceding years, with only 4.4 turns for the year.

Chart C 2 on page 158 shows the wholesale grocer's distribution of the dollar the retailer pays for merchandise:

Digitized by Google

Chart C 1.

WHOLESALE GROCERS' STOCK TURN



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart C 2.

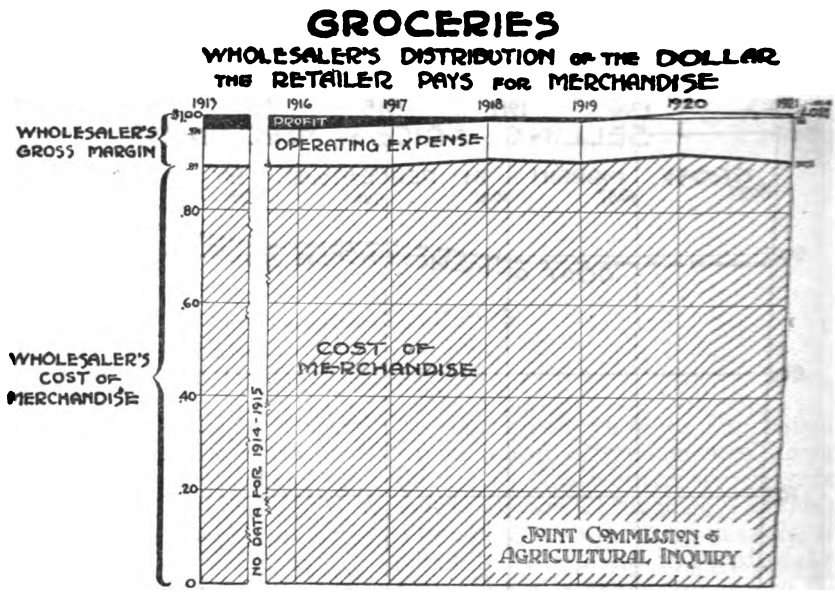


TABLE C 1.—*Wholesale grocer.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	89.03	89.43	89.69	91.00	90.72	92.62	98.29
Operating expense	8.42	8.48	8.49	8.68	8.42	8.52	16.15
Profit	2.55	2.09	1.82	.32	.86	[1] 1.14	[1] 1.44
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

[1] Loss.

Digitized by Google

Chart C 2 shows that the wholesale grocer's ratio cost of operation dollar of sales remained comparatively constant from 1913 to 1920, clusive, and increased in 1921. It also indicates that during the ears 1920 and 1921, the wholesaler absorbed a loss during the period ue to falling prices.

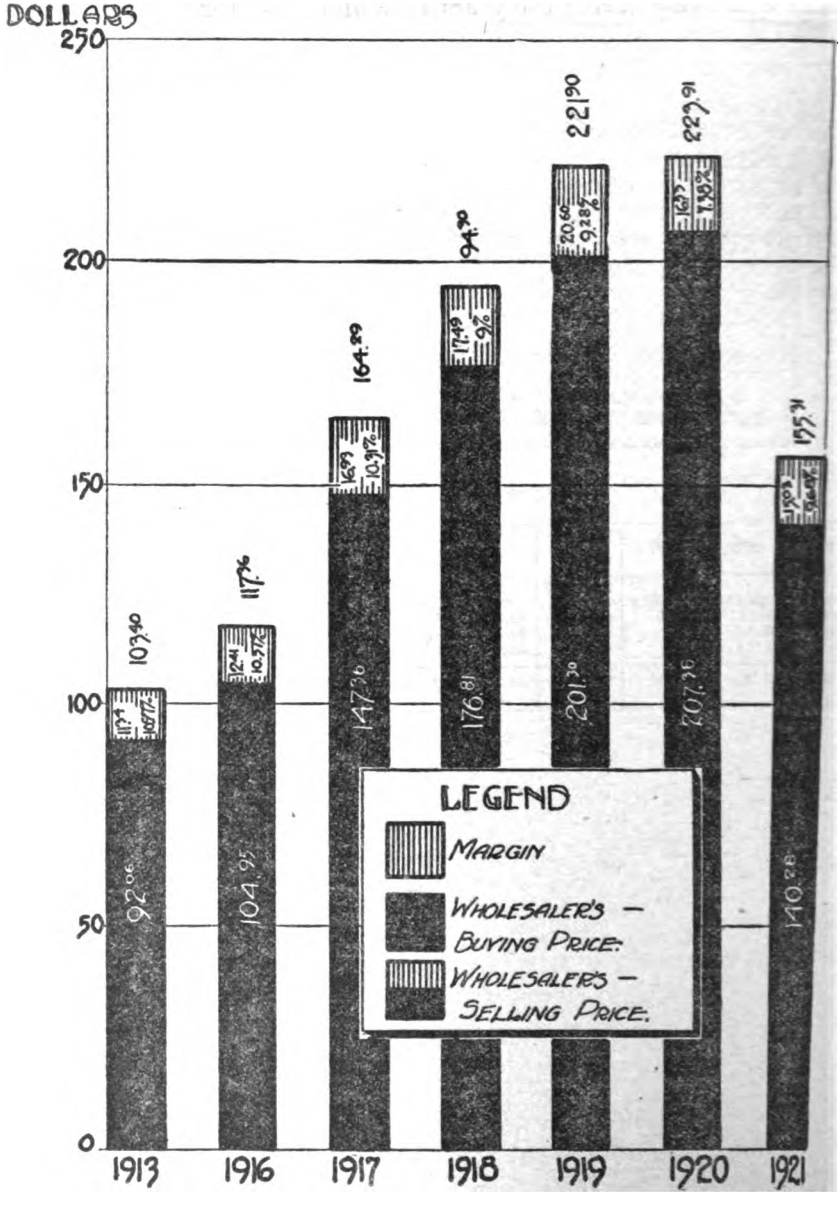
Chart C 3 on page 160 shows the fluctuating prices on 22 commodi- ies at wholesale during the years 1913 and 1916–1921:

Digitized by Google

Chart C 3.

GROCERIES — WHOLESALE

TOTAL OF AVERAGES OF 22 COMMODITIES 1913–1921



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE C2.—*Wholesale groceries.*

	1913	1916	1917	1918	1919	1920	1921
Selling price of merchandise....	$103.40	$117.36	$164.29	$194.30	$221.90	$223.91	$155.31
Cost....	92.06	104.95	147.36	176.81	201.30	207.38	140.28
Margin....	11.34	12.41	16.93	17.49	20.60	16.53	15.03
Per cent....	10.97	10.75	10.31	9.00	9.28	7.38	9.68

In a measure the wholesale grocer serves as purchasing agent for a number of retail grocers and maintains contact with manufacturers. He buys in quantities and distributes in smaller quantities to retailers and extends to them credit and service. When the wholesaler merely serves as a distributing agent for the manufacturer and fails to function as purchasing agent for the retailer and the consumers within the territory supporting him, he ceases to perform a truly economic service.

Digitized by Google

Chapter VIII.

DISTRIBUTION.

RETAILING.

The retailer performs the final function in distribution of essential commodities and gives fulfillment to all preceding efforts by making merchandise available to consumers at the time, place, and in the form required by them.

The retailer's true function is that of serving as a purchasing agent for his community; as such he selects and carries a reserve supply of merchandise to meet the requirements of the individual consumer.

When the retailer enters business he assumes the responsibility of performing a public function, that of providing commodities and services to his community, economically and conveniently, and maintaining such environment as is necessary and desirable to the consumers who support him. If he fails in his responsibility and performs only as a distributing agent for the manufacturer, he ceases to be an economic factor in the community which he serves.

One of the outstanding defects in retail distribution is the retailer's failure to purchase stock in a manner that will provide a steady, even flow of merchandise to the consumer without accumulation of surplus stock, which ties up capital and credit and adds to his cost of operation. It seems probable that the greatest factor of waste in distribution is in idle merchandise stock on the shelves of the retailers and the warehouses of the wholesalers. Idle merchandise accumulates a burden of interest, insurance, rent, taxes, depreciation, shrinkage, and obsolescence, in addition to tying up an unnecessary amount of capital and credit. When this burden is permitted to develop, it must be passed along to the consumer if the retailer is to remain in business.

The policy of overpurchasing reflects the practice of manufacturers who make inducements to retailers to purchase in larger quantities than they can dispose of quickly. Merchandise investment reaches its highest point of efficiency when stock turns exactly correspond with the merchandise requirements of the community and the facility for purchase without exhausting stock.

Charts D1 to D4 on pages 163 to 166, inclusive, show a comparison of the stock investment based on actual turns with the stock investment based on the greatest turn shown during the period 1913–1921, inclusive.

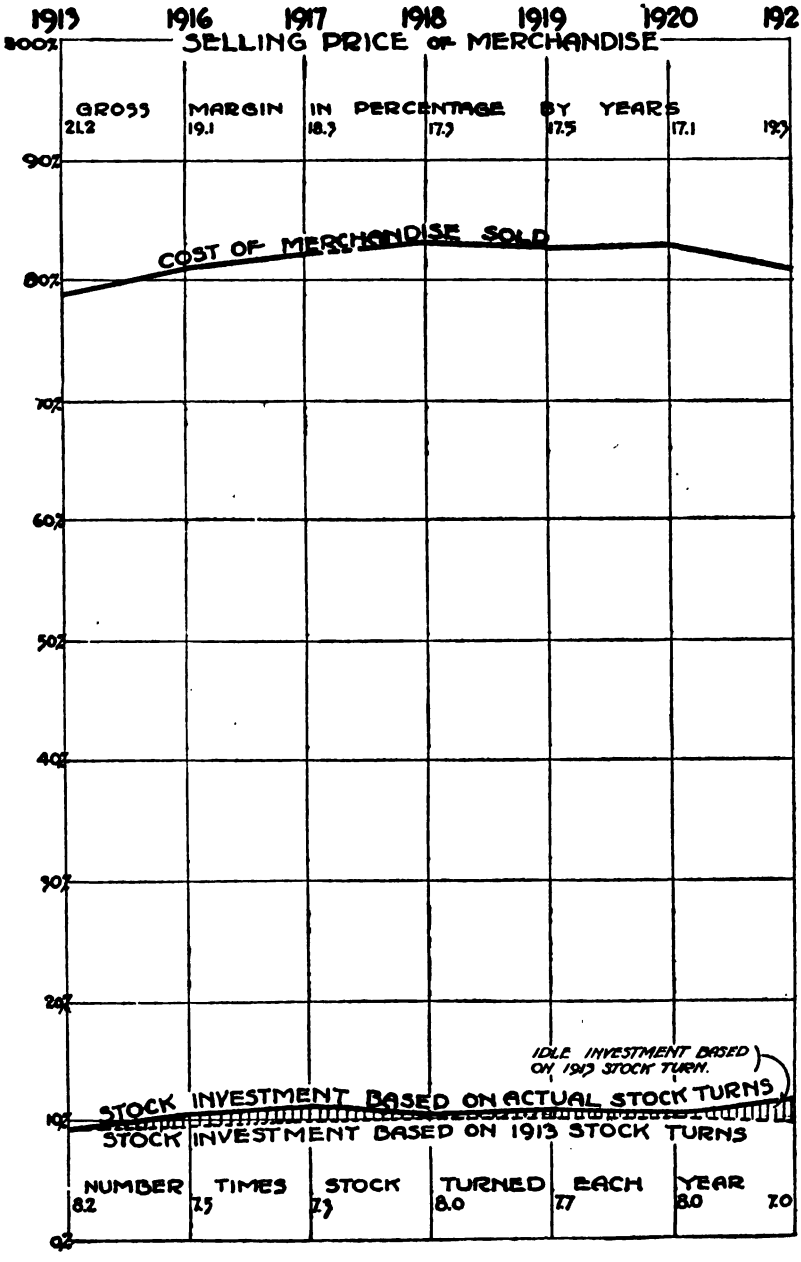
The stock turns shown in charts D1 to D4 are not intended to indicate that any retail industry has reached a point of efficiency in the matter of frequency of stock turn.

It is the purpose of these figures to show for the years 1913 and 1916–1921: (1) The gross margins received, i. e., the difference between the selling price and the cost of the merchandise; (2) the

Digitized by Google

Chart D 1.

RETAIL GROCERS' STOCK TURN

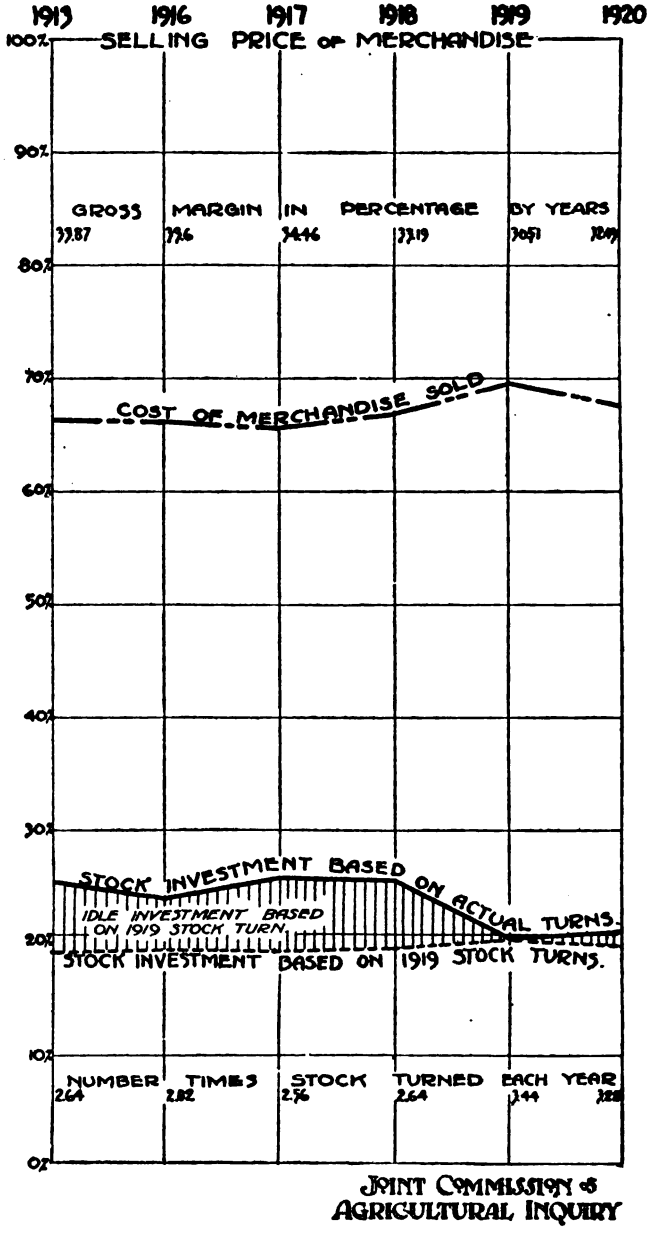


JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart D 2.

RETAIL DRYGOODS STOCK TURN

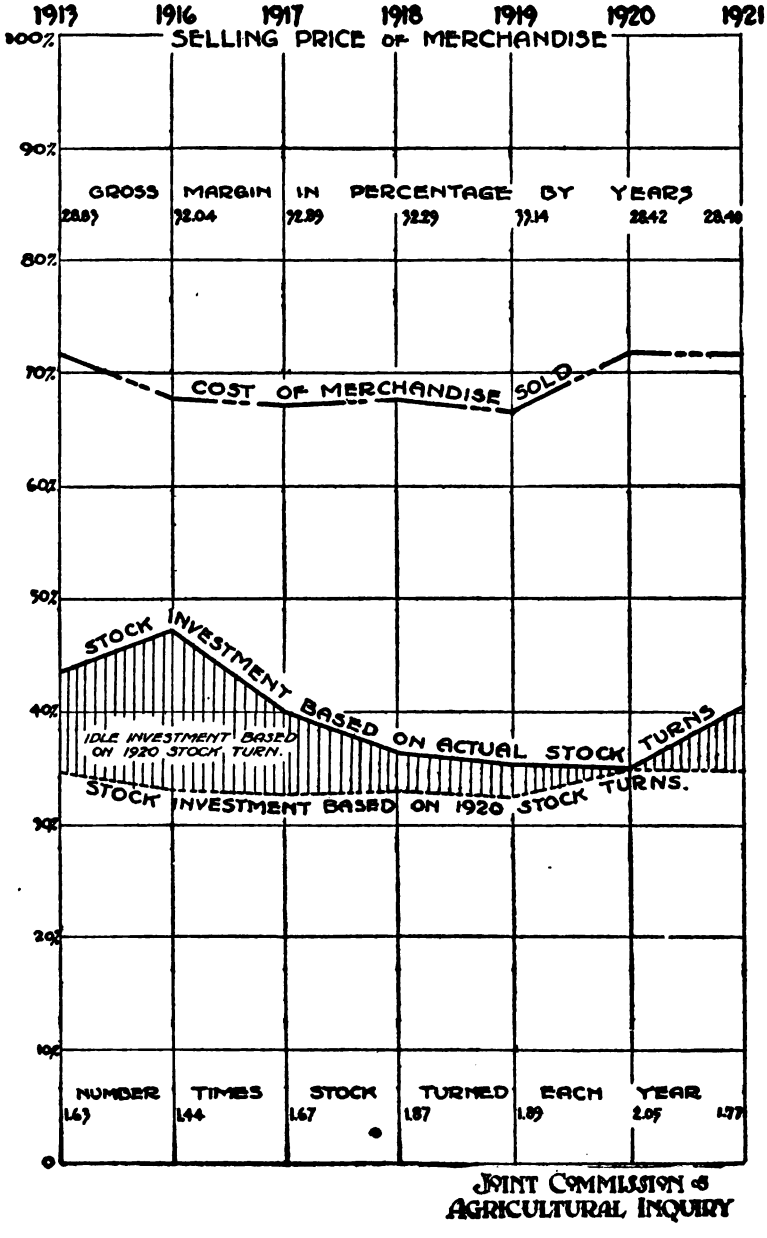


JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart D 3.

RETAIL SHOES STOCK TURN

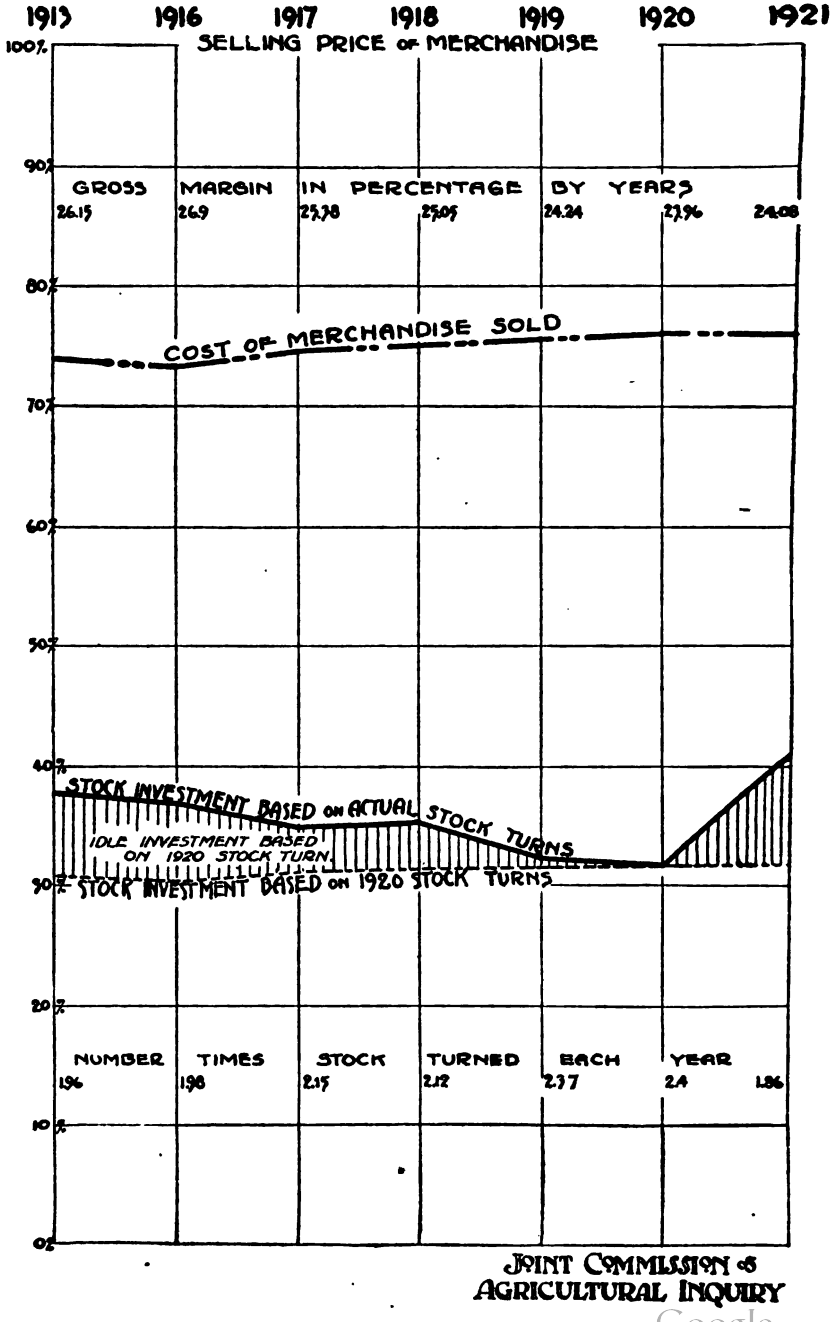


JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart D 4.

RETAIL HARDWARE STOCK TURN



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

t of the merchandise delivered at the retailer's door; (3) the ount of stock investment; (4) the stock turn figure, i. e., the nber of times merchandise stock is turned per year; (5) the amount stock investment that would have been required to maintain ck turn equal to the highest frequency shown during the period ered by this investigation.

The aggregate of these idle stock investments constitutes a heavy rden upon retail distribution, requiring greater credit, larger loans, ater cost of insurance, unnecessary warehousing and handling. represents larger charges for interest on investment in merchandise d a greater allowance for depreciation of stock than efficient mer- andising would justify. In many instances, such investment in rplus stock consumes all of the retailer's capital and credit and akes it impossible for him to take advantage of cash discounts id protect his credit standing.

To some extent, surplus stocks are developed through the retail- r's desire to secure quantity discount in the belief that he can there- y successfully meet competition and undersell his competitors. To o this, however, he would have to dispose of merchandise within reasonable time or lose the earning value of more rapidly turned apital.

Quantity discounts are offered in two forms, cash discounts from he invoice, or a merchandise discount, sometimes termed a "free leal." The latter, however, is a disappearing evil in merchandising, nd should be discontinued, because it results in the dealer ordering a larger quantity than his community can absorb within a reasonable time, and adds to a surplus of merchandise a further supply of the same kind of merchandise thereby aggravating an already overstocked condition. The "free deal" practice is dishonest because it purports to be a gift of merchandise, while as a matter of fact the price which the retailer pays includes a profit for the manufacturer on the entire amount of merchandise delivered, including that which purports to be free.

Slow stock turns sometimes result from the retailers purchasing in excessive quantities directly from the manufacturers, with the purpose of securing a quantity price, when it would be more economical to purchase more frequently and in smaller quantities from a near-by wholesaler.

In a previous chapter, we have referred to the disadvantage of future purchasing in anticipation of an unknown demand.

As purchasing agent for his community, the retailer should be in a position to quote prices on such articles in his line as he does not carry regularly in stock. Failure to do this lessens his service to the community and makes it seem necessary to the consumer to purchase through other channels. A greater degree of cooperation between wholesalers and retailers in providing adequate price information would add to the efficiency of the retailer and increase the business of both wholesaler and retailer. In certain fields this service has been developed by wholesalers through a system of distributing price information by mail, covering a wide range of articles that the retailer does not carry in regular stock. In addition to this, the service is valuable in that it advises the retailer of price declines which he would not ordinarily observe before repurchasing.

Digitized by Google

The retailer can qualify as purchasing agent only as he becomes acquainted with the needs of the community, and this information can not be secured by remaining behind the counters of his store and waiting for consumers to announce their requirements. The retailer can not properly anticipate the requirements of the consumers in the community without becoming familiar with the demands and new requirements that result from changing economic conditions.

To this end the retailer should cooperate more closely with community organizations whose purpose it is to improve social, civic, commercial, and industrial conditions. In agricultural communities the retailer should maintain contact with farm demonstrators, agricultural colleges, and workers, with a view to assisting in activities that tend to improve production, marketing, transportation, and social conditions on the farm. In cooperating with such organizations he is helping to create greater opportunity for his own success.

There are occasions when consumers feel that the retailer is not functioning satisfactorily as a purchasing agent, and there develops a disposition to create a cooperative buying organization in the belief that it would function more satisfactorily and economically. When proper relations exist between the retailer and consumer, there is neither apparent need nor advantage in creating a new agency to perform the functions of purchasing agent.

As these facts become more clearly understood by consumers there should be better support of local distributors, and this support would naturally be given to the retailers who function most efficiently as purchasing agents, with the gradual elimination of those retailers who merely serve as distributive outlets for the manufacturers.

The services rendered by the retailers are of three types: (1) Fundamental services; (2) services resulting from consumer demand; (3) services resulting from competition.

The fundamental service consists of the retailer's investment of capital in merchandise in anticipation of community requirements in quantity and variety to permit inspection and selection before purchasing. With a knowledge of merchandise and the sources from which it can be secured, the retailer contributes to the convenience and comfort of the community he serves.

The service which the retailer renders in response to consumer demands consists of the following elements: Credit to the consumer who finds it inconvenient to pay cash for purchases as they are made; delivery of merchandise for the consumer who finds it inconvenient to accept merchandise at the time and place of purchase; guaranty that the merchandise is of the quality, quantity, and value which the consumer believes he is purchasing.

The services which result from competition tend to maintain a comparative level of selling price of similar articles and similar service in the various stores. However, in the competitive effort to attract consumers from one store or one locality to another, new services are created which ultimately are adopted by the majority of stores in order to avoid the loss of patronage. This form of competition tends to increase investment in fixtures, convenience, and waste space utilized for such purposes as rest rooms, play rooms, writing rooms, restaurants, etc.

These services may to a certain point attract trade and produce an increased volume of business, with some modification of operating

Digitized by Google

cost. But when such services are instituted by one retailer and duplicated by others, they tend to create a burden of operating expense that can not be economically supported by a community.

Composite chart D5 on this page of the distribution of the consumer's dollar by retail dry goods, grocery, shoe, clothing, and hardware dealers shows for 1913 a gross margin of 29.16 cents, of which 6.80 cents was profit, while for 1921 the gross margin was 25.52 cents, of which 1.13 cents was profit. In 1913 the operating expense, exclusive of profit, was 22.36 cents, and in 1921, 24.39 cents, showing an average increase of operating cost of 2.03 cents and a diminishment of profit of 5.67 cents, while the proportion of merchandise included in the consumer's dollar increased 3.64 cents. Out of the profit must be deducted such items as shrinkage in inventory value of merchandise, Federal tax, and stock-moving reductions in response to price declines or movement of stock accumulation. See Table D1 below.

Chart D 5.

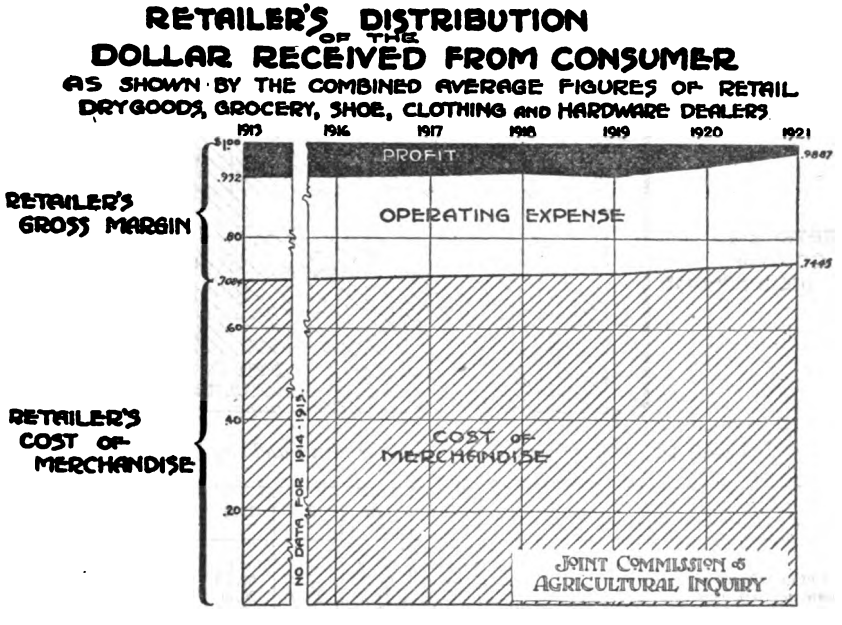


TABLE D1.—*Distribution of consumer's composite dollar in dry goods, groceries, shoes, clothing, and hardware.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	70.84	71.19	71.39	71.93	72.24	73.76	74.48
Operating expense	22.36	21.95	22.25	22.14	21.20	22.21	24.39
Profit	6.80	6.86	6.36	5.93	6.56	4.03	1.13

Digitized by Google

The following pages show the distribution of the consumer's dollar by individual industries investigated:

Chart D6 on this page shows that the clothing retailer has paid a larger proportion of the dollar received from the consumer for men's and boys' clothing from year to year from 1913 to 1921, inclusive. Operating expense has varied from 25.90 cents per dollar of sales in 1913 to 26.50 cents in 1918, and 24.03 cents in 1921. From 7.90 cents per dollar of sales in 1919, profits have declined to 3.60 cents in 1920 and to 1.13 cents in 1921. See Table D2 below.

Chart D 6.

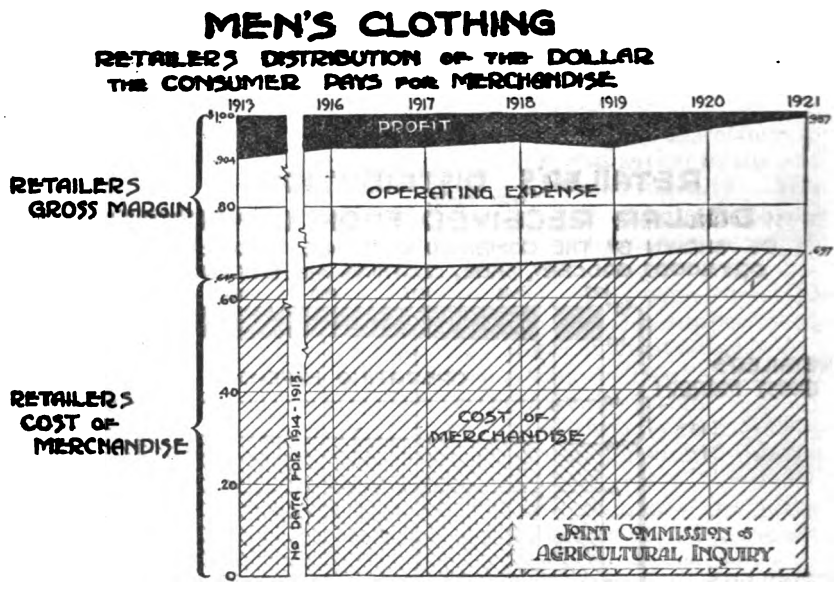


TABLE D2.—*Consumer's dollar spent for men's and boys' clothing.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	64.50	67.60	67.60	67.50	68.10	70.70	74.84
Operating expenses	25.90	25.20	25.30	26.50	24.00	25.70	24.03
Profit	9.60	7.20	7.10	6.00	7.90	3.60	1.13
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Digitized by Google

Chart D7 on this page shows that hardware profits were largest in the year 1916, when the retailer averaged 8.3 cents profit out of each dollar paid him by consumers for merchandise. From this point profits declined steadily as increased costs of operation and merchandise absorbed them. In 1921, due to a marked decrease in volume of sales, the ratio of operating expenses to sales increased materially, resulting in a loss for that year amounting to 0.82 cents on a dollar of sales in the hardware trade. Average profit for the entire period was 5.35 cents per dollar of sales. See Table D3 below.

Chart D 7.

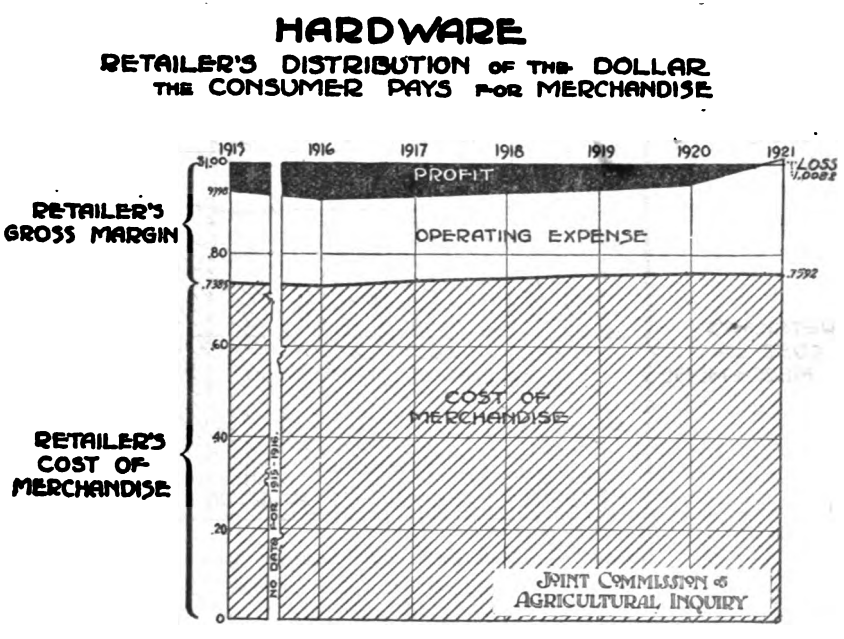


TABLE D3.—*Consumer's dollar spent for hardware.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	73.85	73.10	74.62	74.95	75.76	76.05	75.92
Operating expense	20.13	18.60	18.25	18.52	18.40	19.50	24.90
Profit	6.02	8.30	7.13	6.53	5.84	4.45	[1] .82
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.82

[1] Loss.

Digitized by Google

Chart D8 on this page shows that the largest amount of profit per dollar of sales in the shoe trade occurred in 1919, with an average figure of 9.36 cents for that year. Profits rose gradually to this figure, beginning in 1913 with 4.69 cents. From 1919 a decline in profits began, showing 1.52 cents for 1921. Profits over the entire period averaged 6.19 cents per dollar of sales. See Table D4 below.

Chart D 8.

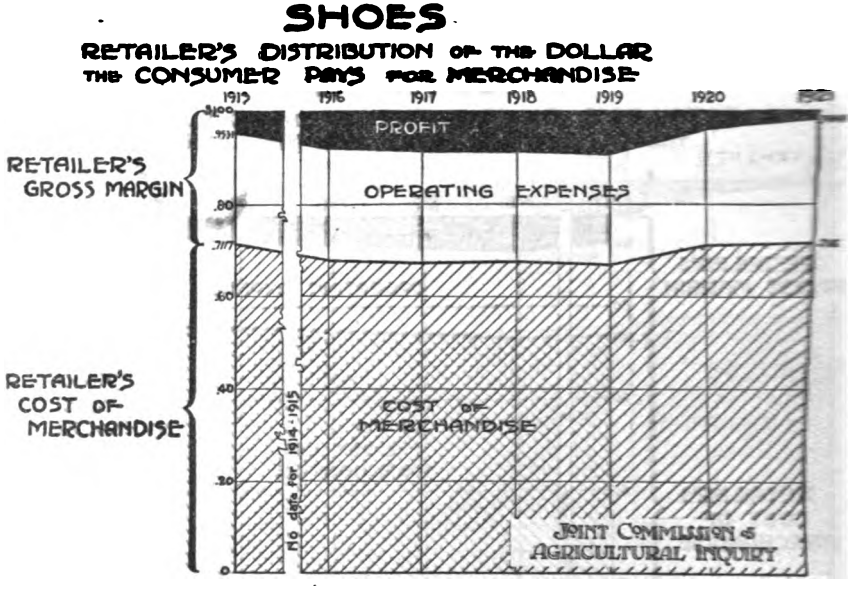


TABLE D4.—*Consumer's dollar spent for shoes.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	71.17	67.96	67.11	67.70	66.86	71.58	71.60
Operating expense	24.14	24.45	24.21	24.07	23.78	25.25	26.88
Profit	4.69	7.59	8.68	8.23	9.36	3.17	1.52
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Digitized by Google

Chart D9 on this page shows that the largest profit on groceries at ail during the period of the commission's study was 6.50 cents per llar of sales in 1913, which was not again equaled, even in 1920 ien retail groceries reached the highest selling price. In 1913 the argin, including profit, was 21.2 cents, and in 1921 the margin was .30 cents. The average profit for the period was 3.71 cents per llar of sales. See Table D5 below.

Chart D 9.

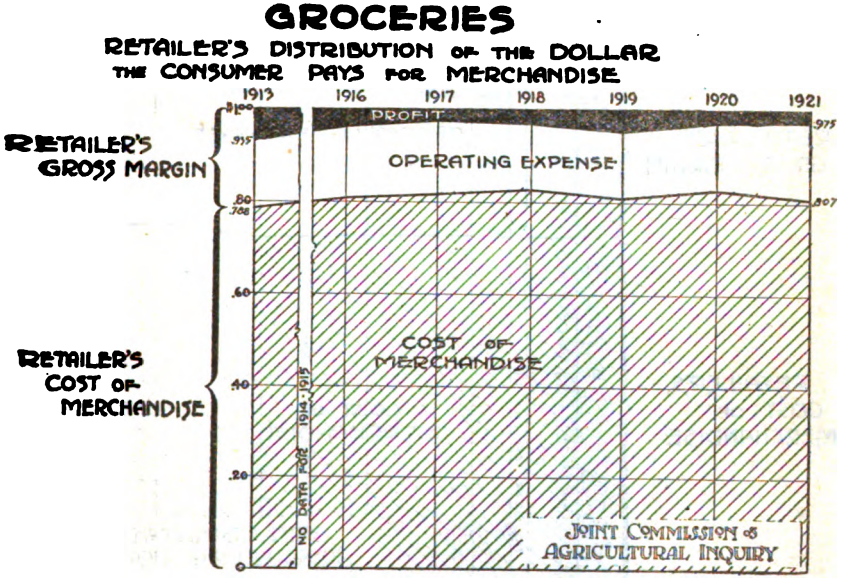


TABLE D5.—*Consumer's dollar spent for groceries.*

	1913	1916	1917	1918	1919	1920	1921
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	78.80	80.90	81.70	82.70	81.00	82.90	80.70
Operating expense	14.70	15.20	15.50	14.30	14.20	14.60	16.80
Profit	6.50	3.90	2.80	3.00	4.80	2.50	2.50
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Digitized by Google

Chart D10 on this page shows that the profit on retail dry goods averaged 5.4 cents per dollar of sales over the whole period. Figures are available for only six years. The largest profit was obtained in 1916, when the average was 7.3 cents for each dollar of sales. See Table D6 below.

Chart D 10.

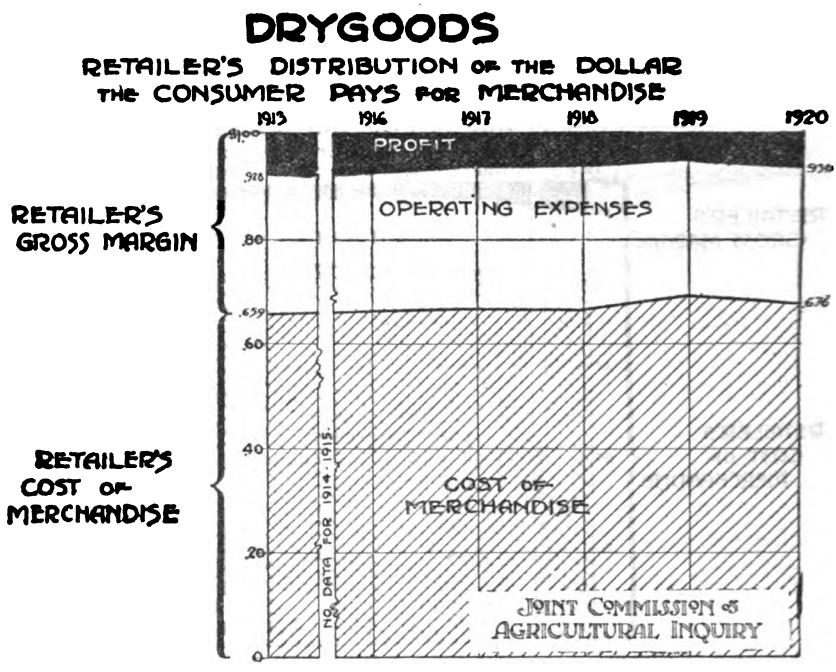


TABLE D6.—*Consumer's dollar spent for dry goods.*

	1913	1916	1917	1918	1919	1920
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of merchandise	65.99	66.40	66.50	66.80	68.50	67.60
Operating expense	26.99	26.30	27.40	27.30	25.60	26.00
Profit	7.29	7.30	6.10	5.90	4.90	6.40
Total	100.00	100.00	100.00	100.00	100.00	100.00

There are no data or statistics upon which to predicate a study of the retail meat industry for the period including the years 1913, 1916, 1917, 1918, 1919, 1920, and 1921 for comparison with the studies of other industries surveyed by the commission. Chart D11 on page 175 shows the result of a study made by the United States Department of Agriculture, Bureau of Markets, for the calendar year 1918. See Table D7, on page 176.

Digitized by Google

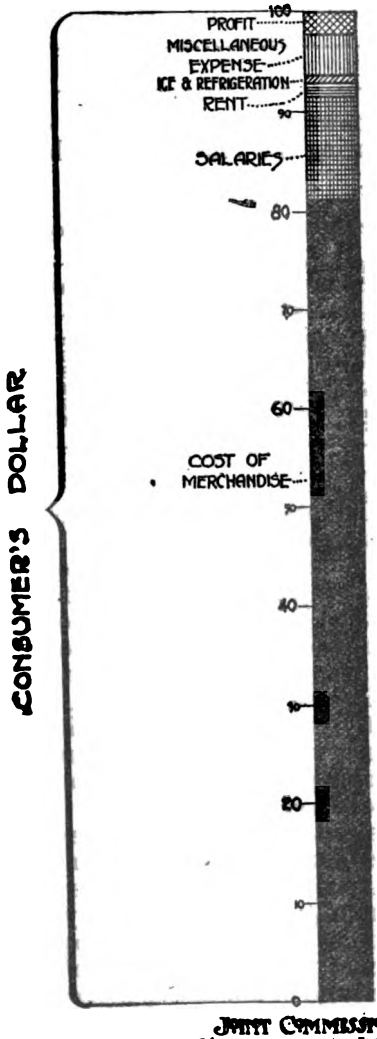
Chart D 11.

MEAT

RETAILER'S DISTRIBUTION of THE DOLLAR THE CONSUMER PAYS FOR MERCHANDISE.

CALENDAR YEAR 1919

DATA - U.S. DEPT. OF AGRICULTURE BUREAU OF MARKETS.



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

COST OF OPERATION.

TABLE D7.—*Operating expenses and profit in the retail meat trade.*

		Cents.
Cost of goods (meats)		81.14
Salaries and wages	10.25	
Rent	1.33	
Ice and refrigeration	.77	
Wrappings	.76	
Heat, light, and power	.21	
Interest	.51	
Miscellaneous expense	2.74	
Total operating expenses	16.57	
Net profit	2.29	
Gross margin		18.86
Total sales		100.00

Table D8, below, shows the fluctuation of operating expenses in percentage of sales during the years and for the various lines covered by the investigation.

TABLE D8.—*Cost of operating retail stores, by percentage of each dollar of sales.*

	1913	1916	1917	1918	1919	1920	1921
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Clothing	25.90	25.20	25.90	26.50	24.00	25.70	24.60
Hardware	20.13	18.60	18.25	18.52	18.40	19.50	20.00
Shoes	24.14	24.45	24.21	24.07	23.78	25.25	26.85
Dry goods	26.90	26.30	27.40	27.30	25.60	26.00	(1)
Groceries	14.70	15.20	15.50	14.30	14.20	14.60	16.50

[1] No data.

It is obvious that the retailer can not control all of the factors that enter into his operating expense. Items of taxes, both State and Federal, insurance, "Workmen's Compensation," light, heat, water, telephone, collections, rent, repairs, depreciation of merchandise and equipment, refrigeration of meats and groceries, shrinkage and deterioration in meats and groceries, etc., are largely uncontrollable expenses. Minimum wage laws and competition for competent help tend to make wage expense a factor that can only be controlled to a degree by increasing the efficiency of the retail sales force, and by the elimination of extra services of a luxury nature. Interest on investment and borrowed money cease to be an expense burden when stock turn reaches an efficient frequency.

It is held by some authorities that money spent for advertising places no burden on consumers because the increased volume of sales obtained through advertising reduces the ratio of total expense to total sales. A community can absorb only a limited amount of merchandise, and where trade is diverted by advertising from one store to another it must increase the ratio of operating expenses of one distributor, if the ratio of another is decreased.

There is an element of service in advertising, by which consumers are notified of the presence of goods they desire, are reminded of their needs, and are educated to the use of better materials.

Digitized by Google

Waste can and does occur in advertising, nevertheless, and it is significant that those trades which are the most persistent and largest users of advertising space carry higher percentages of operating costs than appear in other lines.

In some localities retailers have successfully operated joint delivery systems, through which consumers have received satisfactory service, with a considerable reduction in cost to the merchants participating. Such efforts should be heartily indorsed by the consumer as they tend to lower the prices he pays for his requirements.

The expense of alterations in the clothing industry can be reduced through the cooperation of consumers in demanding less service in this respect and by prohibiting the making of useless alterations suggested by sales people for the purpose of closing sales.

The cost of operating a retail store depends upon the relation between investment and volume of sales. Idle merchandise and tied-up capital inevitably increase operating expense. Frequency of stock turn and increased volume in relation to investment tend to reduce operating expense. Purchasing with knowledge of the requirements of the community avoids accumulation of unsalable merchandise.

It is well to refer again to the fact that the more consumers concentrate purchases in their communities, the lower will be the operating expenses of local dealers, benefiting consumers through lower prices incident to lower selling expense.

One of the outstanding expense elements which the retailer is required to support results from the custom of the consumer of creating busy hours in the day, and busy days in the week, demanding larger organization and greater facilities than would be necessary if trade were more evenly distributed throughout the entire day and entire week. Some retailers employ extra clerks to come in during the periods of "peak trading," but extra help lacks the acquaintance with stock and with customers of the store which is required for entirely satisfactory service.

Retailers add to the congestion of trade by advertising special sales on peak trading days.

Charts D12 to D16, on pages 178 to 186, inclusive, show the fluctuating prices on specified groups of commodities and reflect the price which the retailer paid, the price the consumer paid, the amount of margin, and the percentage of margin to sales price.

Chart D12 deals with men's clothing and covers 10 articles of men's and boys' suits and overcoats, having a value in 1913 of $177.76, which in 1920 had advanced to $400, and in November, 1921, had dropped to $290. See Table D9, on page 179.

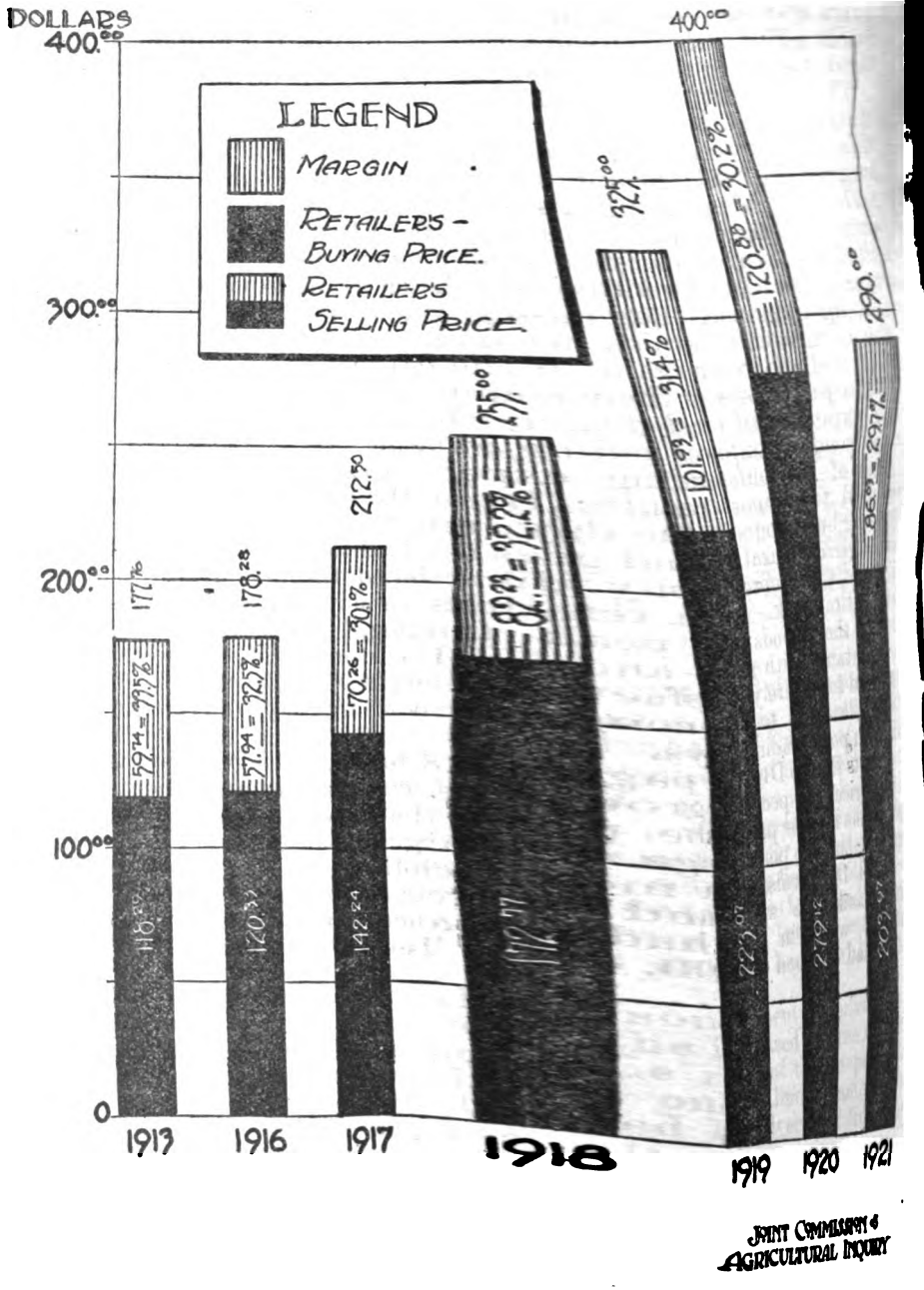
Digitized by Google

Chart D 12.

MEN'S CLOTHING - RETAIL

TOTAL OF AVERAGES FOR 10 ARTICLES

1913 - 1921



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

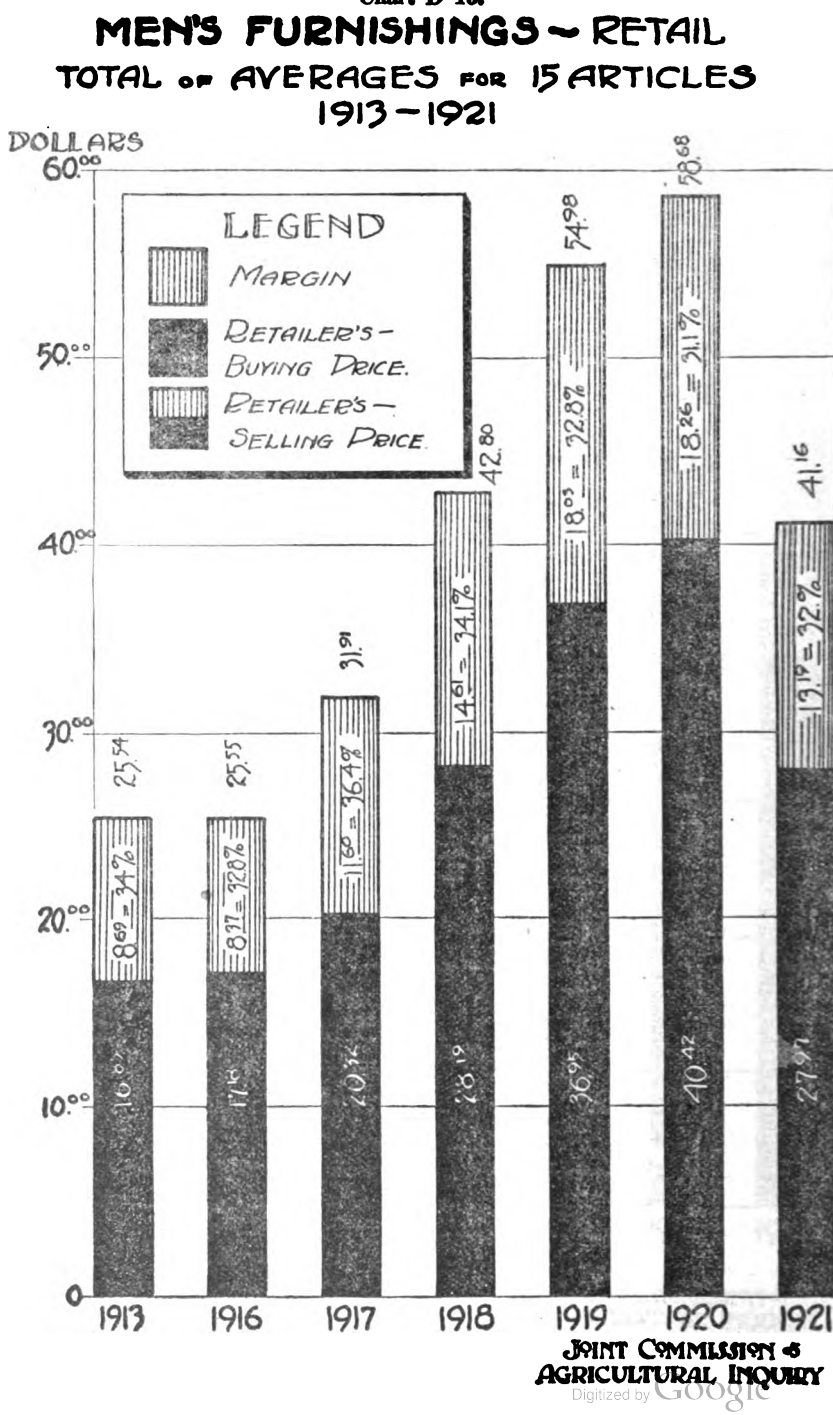
TABLE D9.—*Men's clothing, retail.*

	1913	1916	1917	1918	1919	1920	1921
Cost of merchandise	$118.29	$120.32	$142.24	$172.77	$223.07	$279.12	$203.97
Margin	$59.47	$57.96	$70.26	$82.22	$101.93	$120.88	$86.03
Per cent	33.5	32.5	30.1	32.2	31.4	30.2	29.7
Selling price	$177.76	$178.28	$212.50	$250.00	$325.00	$400.00	$290.00

Digitized by Google

Chart D13 below is based on 15 articles of men's furnishings at retail. See Table D10, on opposite page.

Chart D 13.



Digitized by Google

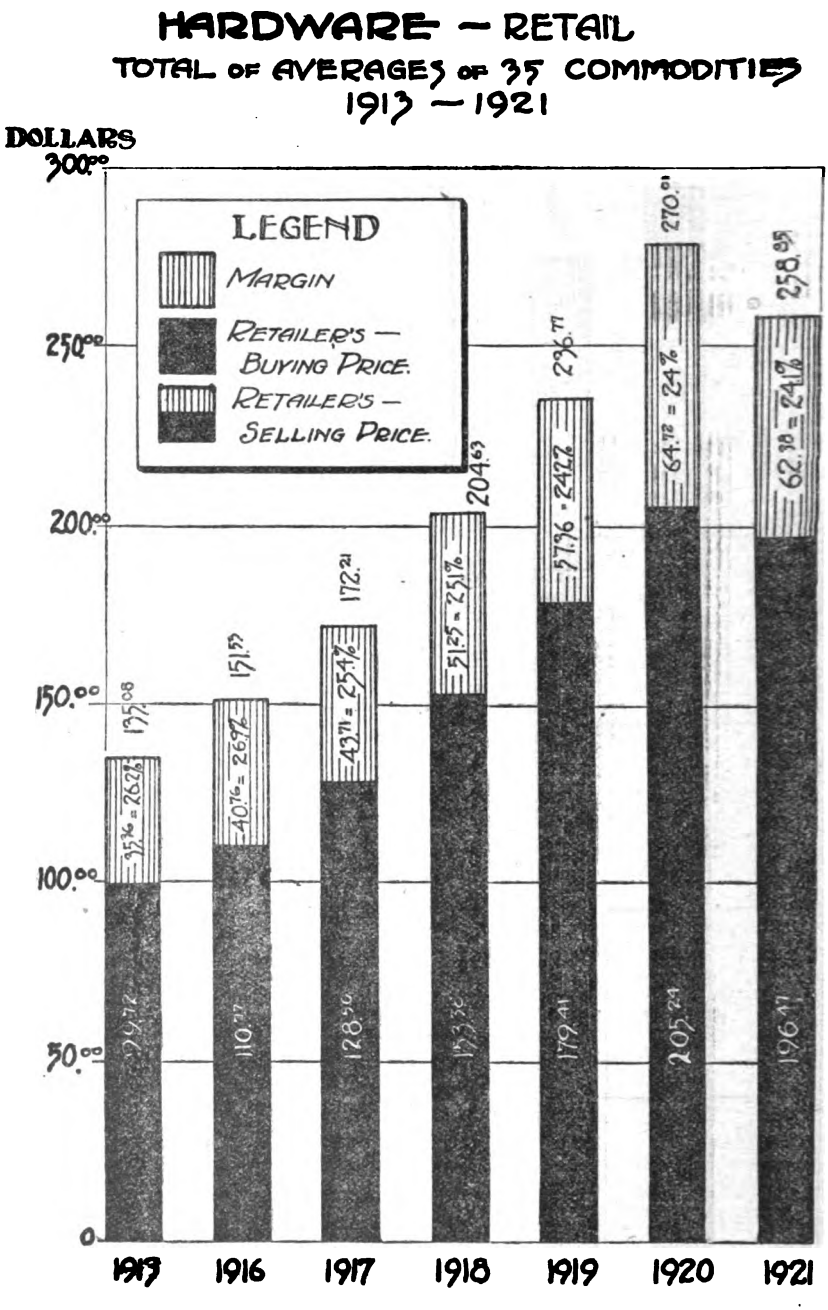
TABLE D10.—*Men's furnishings, retail.*

	1913	1916	1917	1918	1919	1920	1921
Cost of merchandise	$16.85	$17.18	$20.32	$28.19	$36.95	$40.42	$27.97
Margin	$8.69	$8.37	$11.59	$14.61	$18.03	$18.26	$13.19
Per cent	34.0	32.8	36.4	34.1	32.8	31.1	32.0
Selling price	$25.54	$25.55	$31.91	$42.80	$54.98	$58.68	$41.16

Digitized by Google

Chart D14 below is based on 35 items of hardware. See Table D11 on opposite page.

Chart D 14.



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

TABLE D11.—*Hardware, retail.*

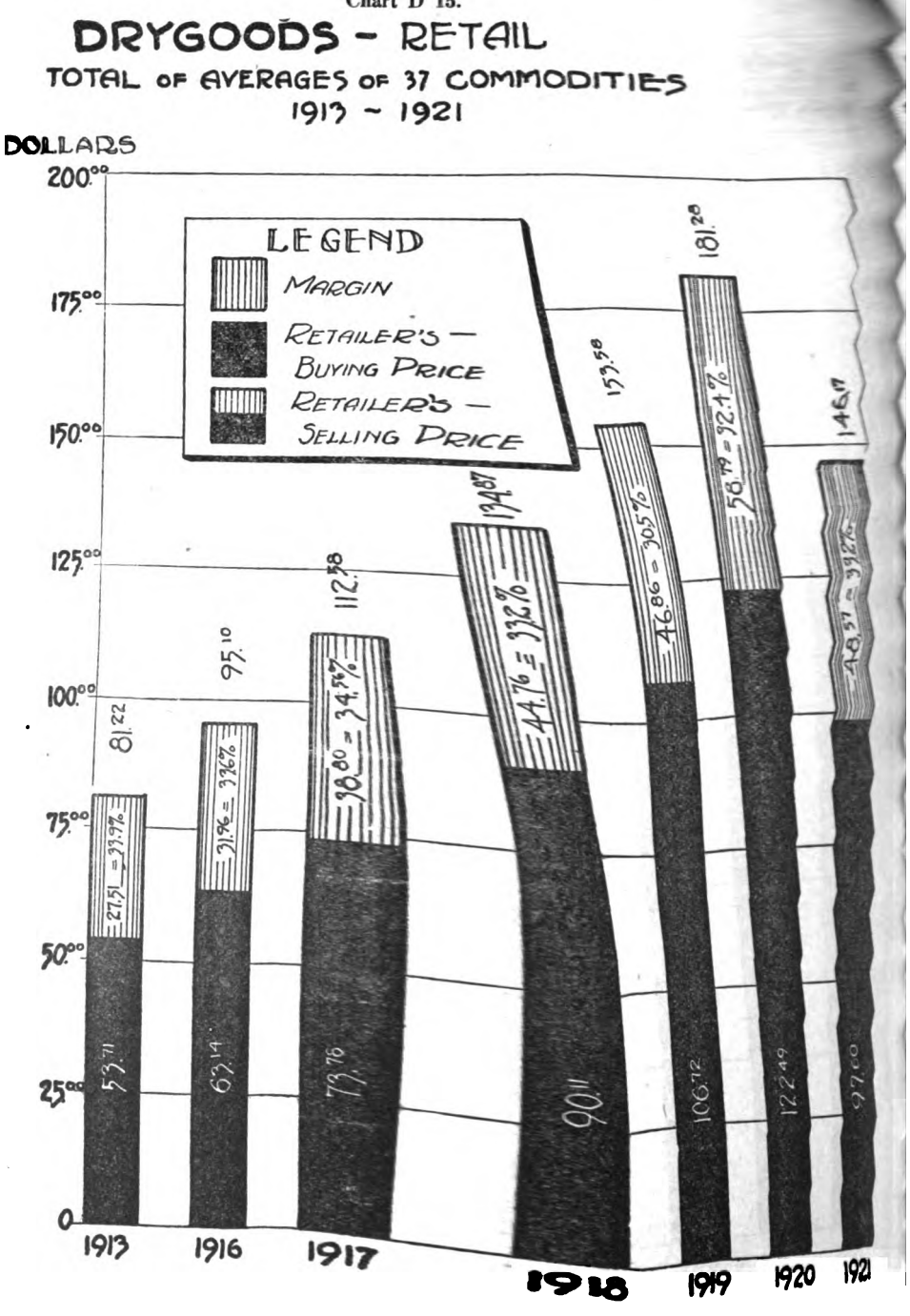
	1913	1916	1917	1918	1919	1920	1921
Cost of merchandise	$99.72	$110.77	$128.50	$153.38	$179.41	$205.24	$196.47
Margin	$35.36	$40.76	$43.71	$51.25	$57.36	$64.77	$62.38
Per cent	26.2	26.9	25.4	25.1	24.2	24.0	24.1
Selling price	$135.08	$151.53	$172.21	$204.63	$236.77	$270.01	$258.85

70678°—H. Rept. 408, pt. 4, 67-1——13

Digitized by Google

Chart D15 below is based on 37 items of dry goods at retail. See Table D12 on opposite page.

Chart D 15.



JOINT COMMISSION of AGRICULTURAL INQUIRY
Digitized by Google

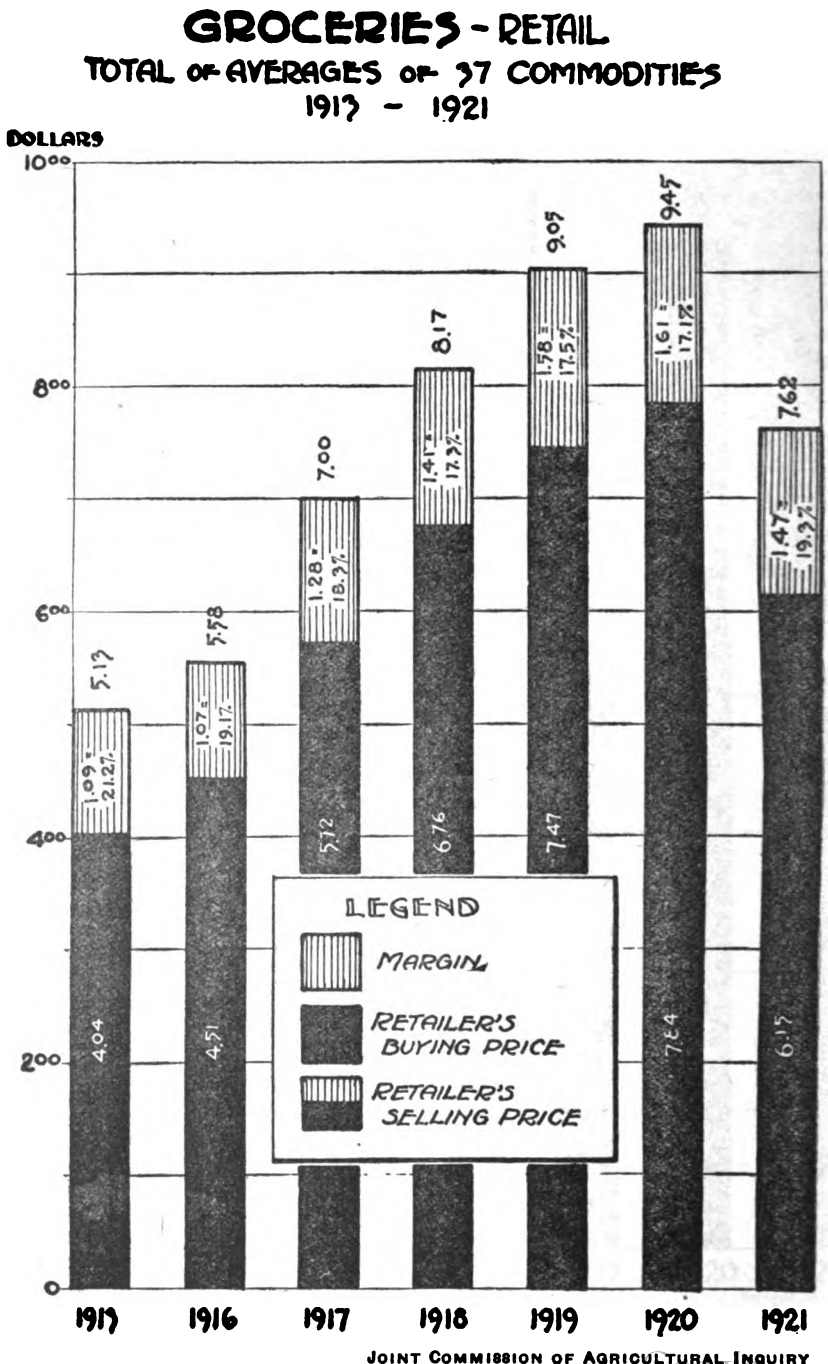
TABLE D12.—*Dry goods, retail.*

	1913	1916	1917	1918	1919	1920	1921
st of merchandise	$53.71	$63.14	$73.73	$90.11	$106.72	$122.49	$97.60
rgin	27.51	31.96	38.80	44.76	46.86	58.79	48.57
r cent	33.9	33.6	34.5	33.2	30.5	32.4	33.2
ling price	81.22	95.10	112.53	134.87	153.58	181.28	146.17

Digitized by Google

Chart D16 below shows the total average purchase price of 37 typical items of groceries at retail into cost of merchandise, margin, and per cent of margin. See Table D13, page 187.

Chart D 16.



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE D13.—*Groceries, retail.*

	1913	1916	1917	1918	1919	1920	1921
st of merchandise	$4.04	$4.51	$5.72	$6.76	$7.53	$7.84	$6.15
argin	1.09	1.07	1.28	1.41	1.77	1.61	1.47
er cent	21.2	19.1	18.3	17.3	19.0	17.1	19.2
lling price	5.13	5.58	7.00	8.17	9.30	9.45	7.62

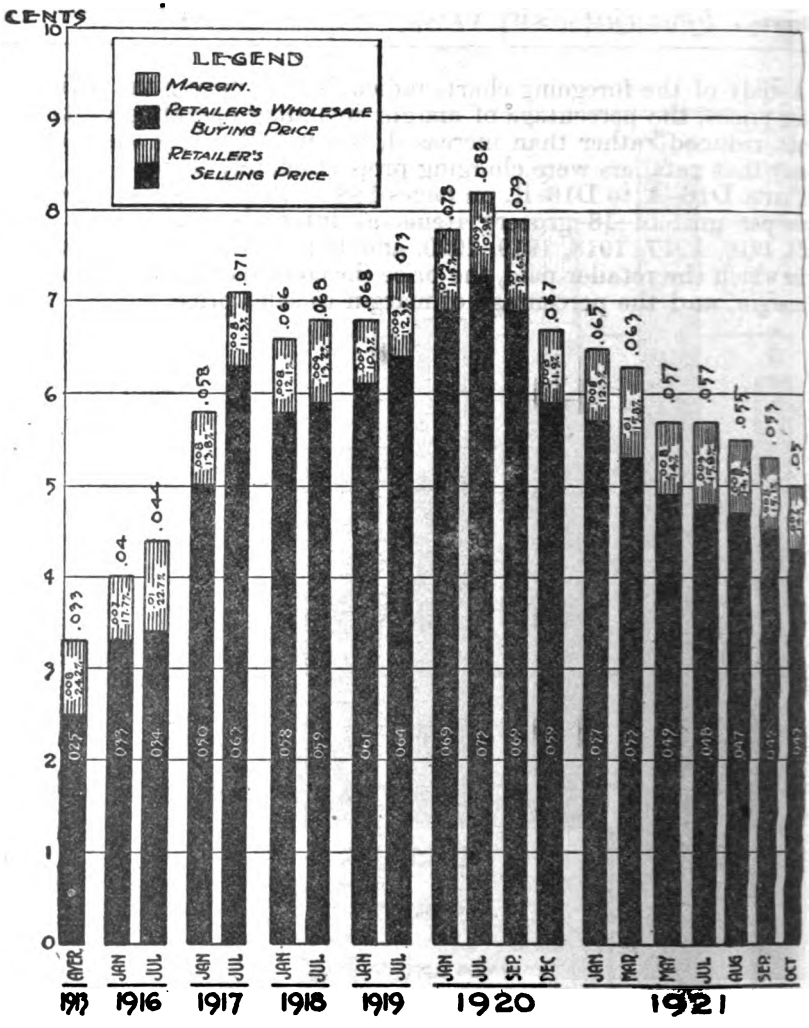
A study of the foregoing charts indicates that during the period of rising prices, the percentage of margin, including operating costs and profit, reduced rather than increased, not withstanding the popular theory that retailers were charging proportionately more.

Charts D16–A to D16–R, on pages 188 to 205, inclusive, show the price per unit of 18 grocery items at intervals during the years 1913, 1916, 1917, 1918, 1919, 1920, and 1921. The charts show the price which the retailer paid, the price the consumer paid, the amount of margin, and the percentage of margin to sales price.

Digitized by Google

Chart D 16-A.

FLOUR - SPRING WHEAT
AVERAGE PRICE PER POUND - 1913 - 1921

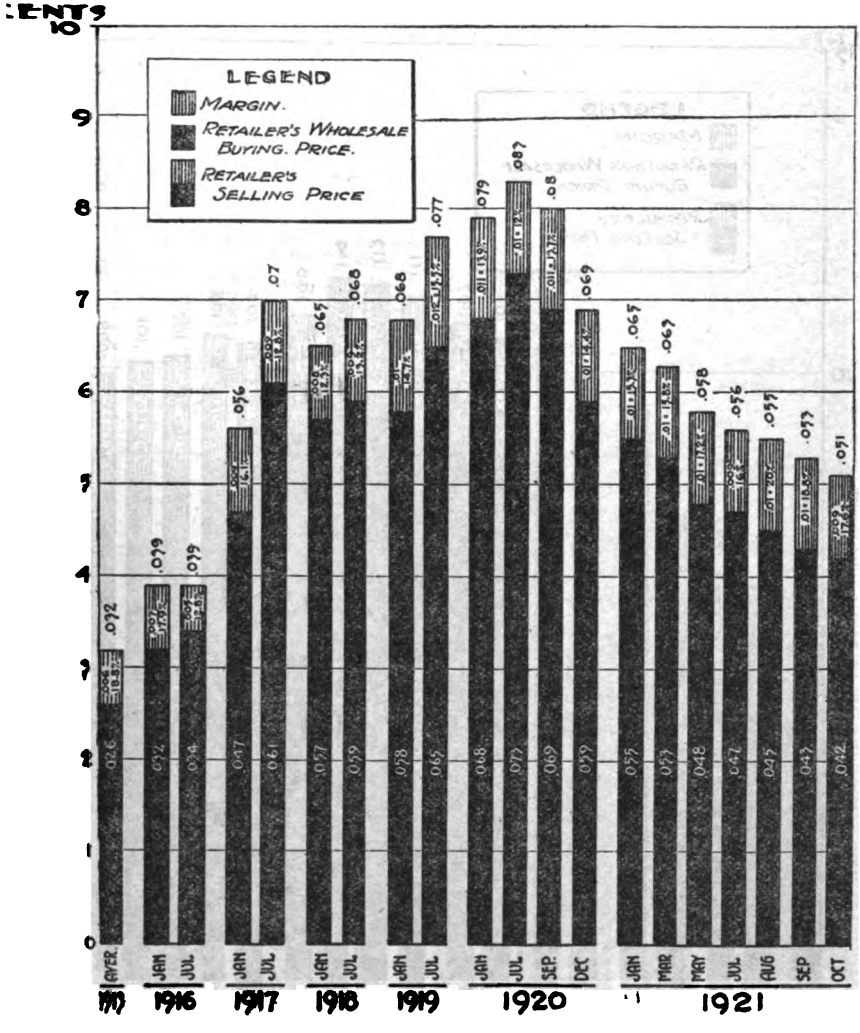


JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart D–16 B.

FLOUR — WINTER WHEAT
AVERAGE PRICE PER POUND — 1913 - 1921

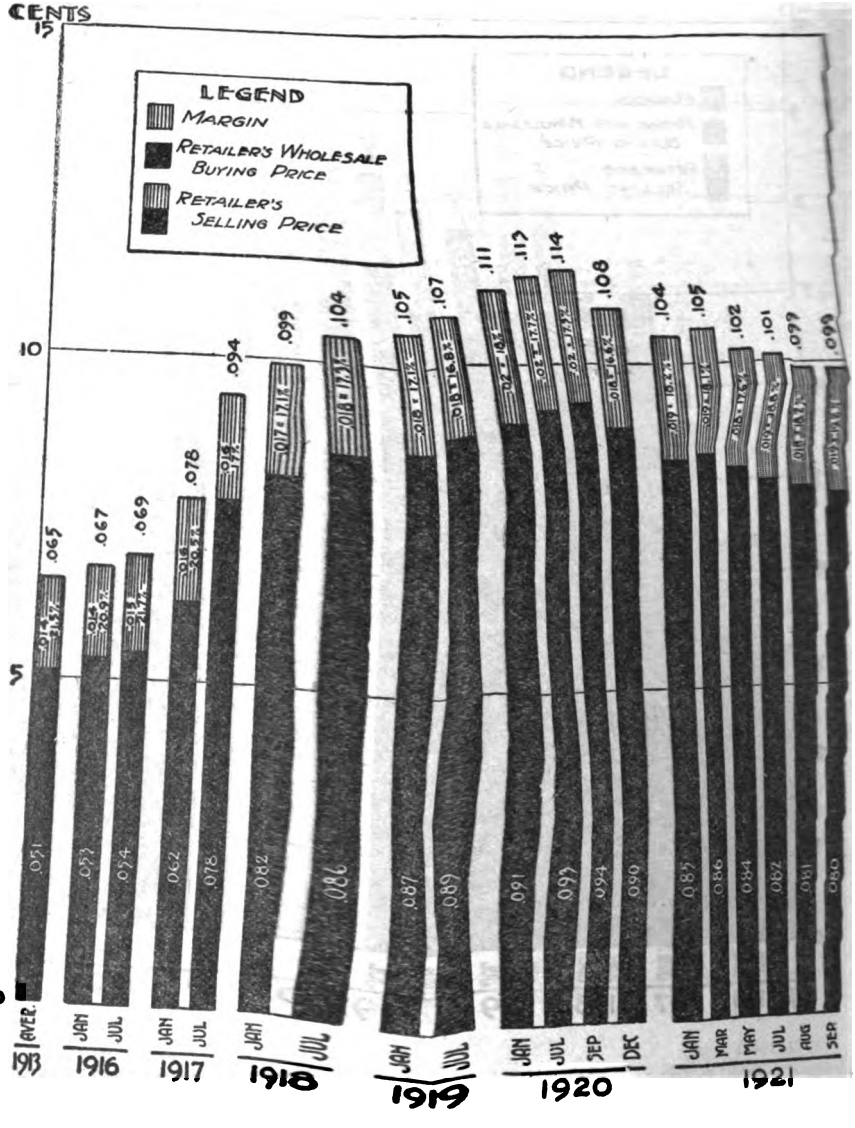


JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart D 16-C.

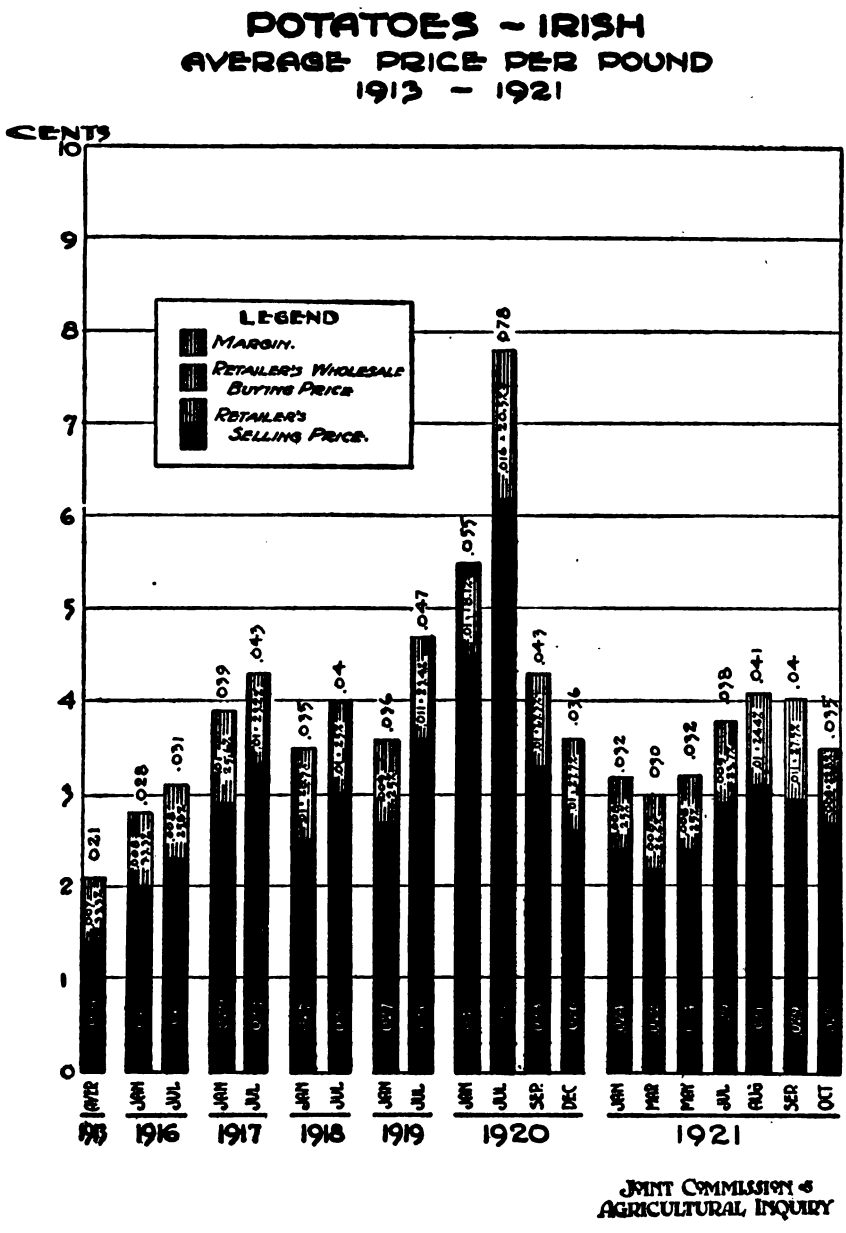
BREAD
AVERAGE PRICE PER LOAF
1913 ~ 1921



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

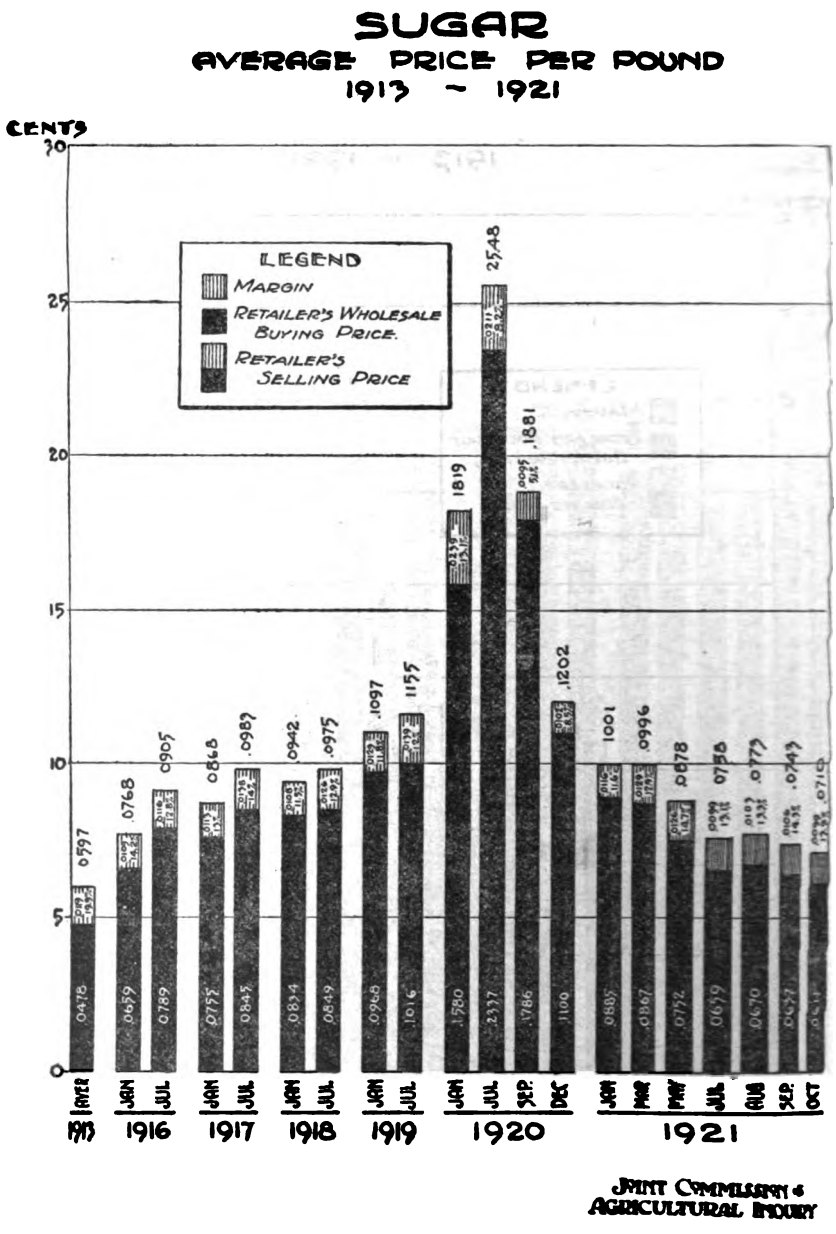
Chart D 16-D.



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

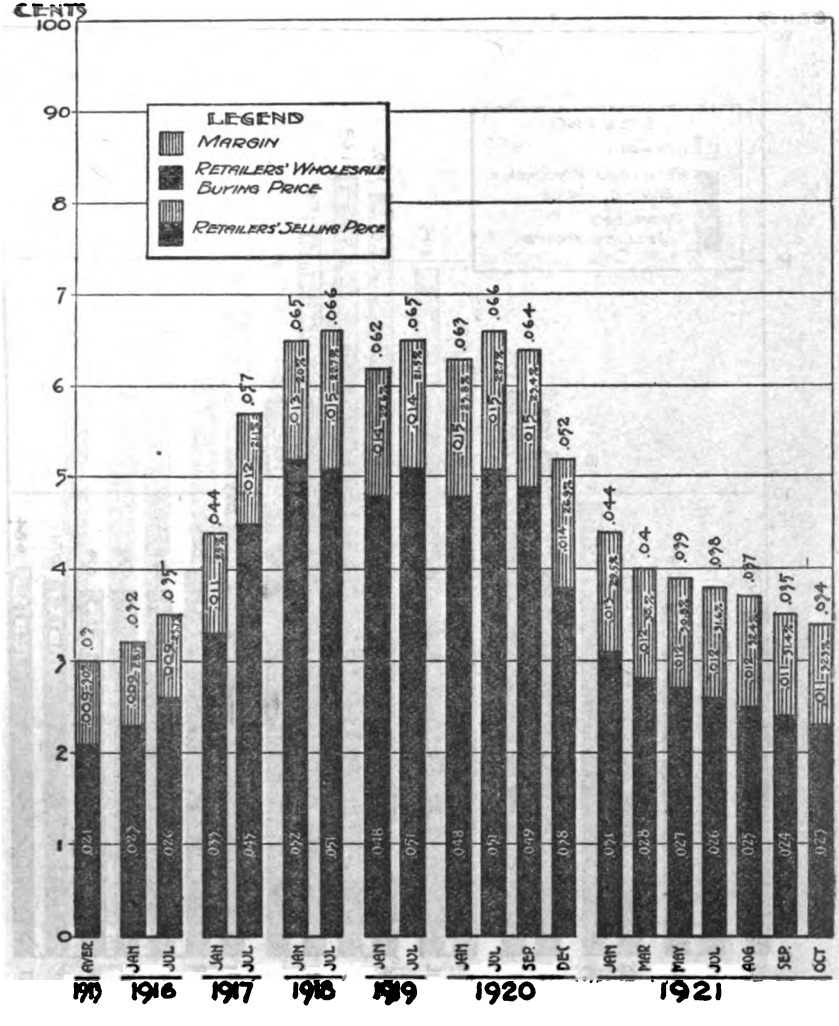
Chart D 16–E.



Digitized by Google

Chart D 16-F.

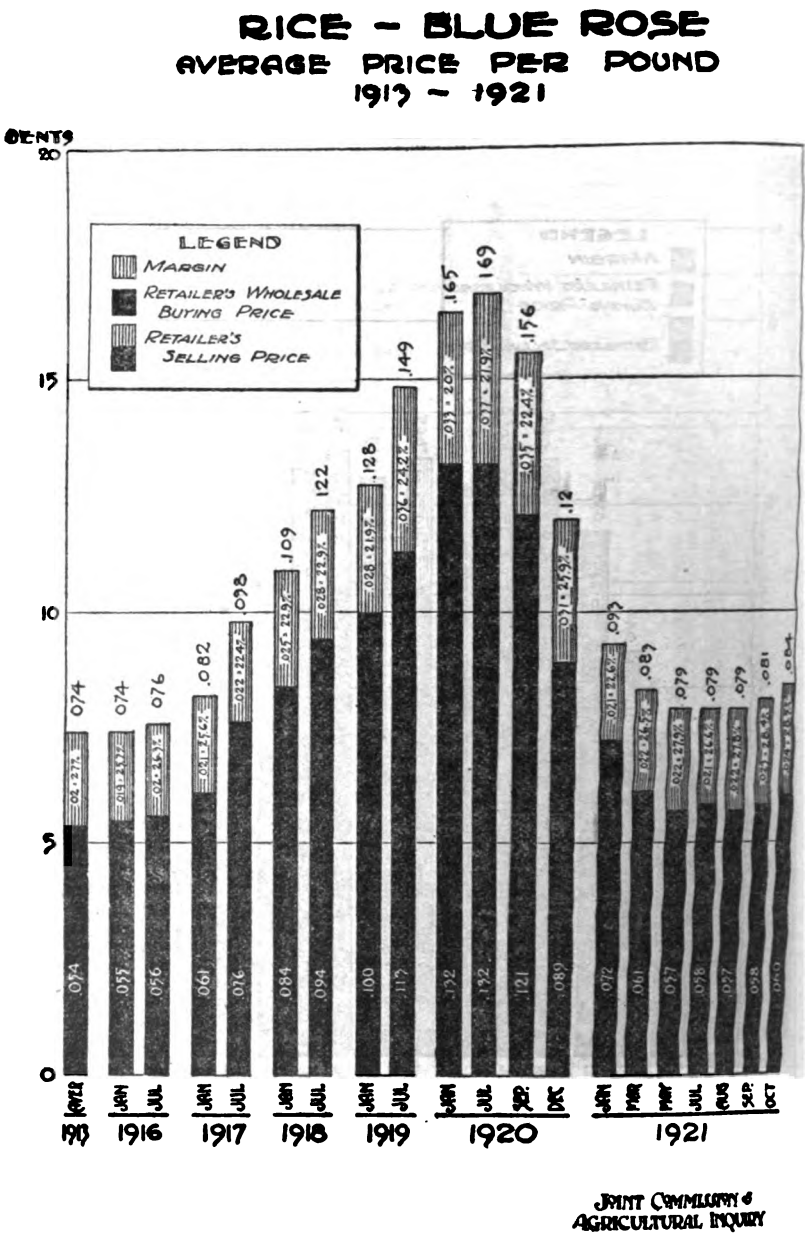
CORNMEAL
AVERAGE PRICE PER POUND
1913 - 1921



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

Chart D 16-G.



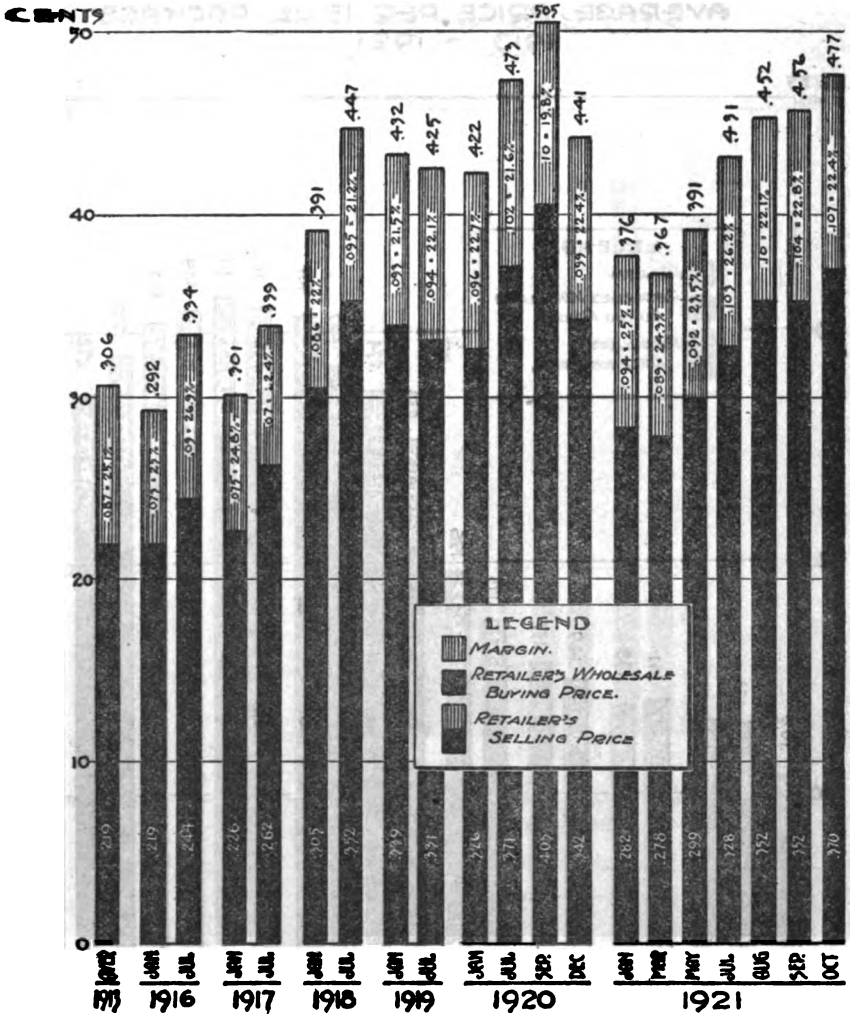
Digitized by Google

Chart D 16-H.

ORANGES

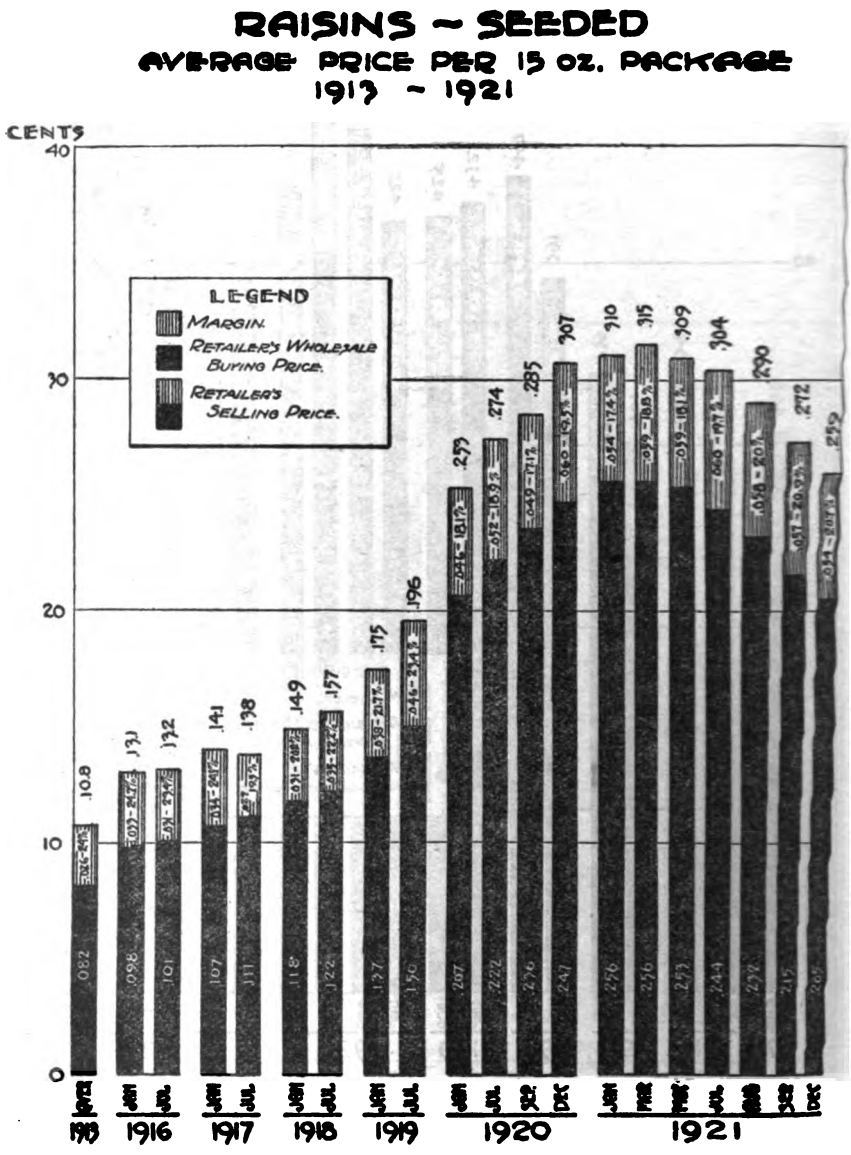
AVERAGE PRICE PER DOZEN

1913 – 1921



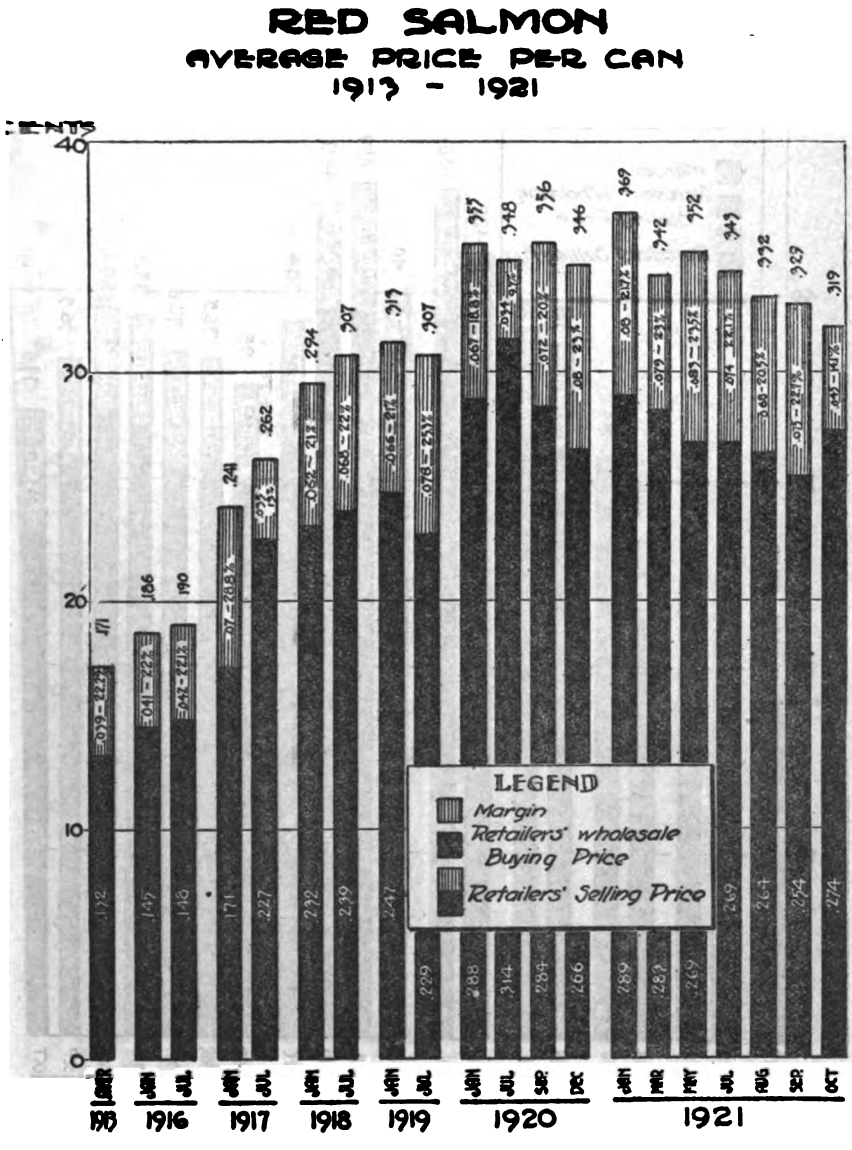
JOINT COMMISSION OF AGRICULTURAL INQUIRY

Chart D 16–I.



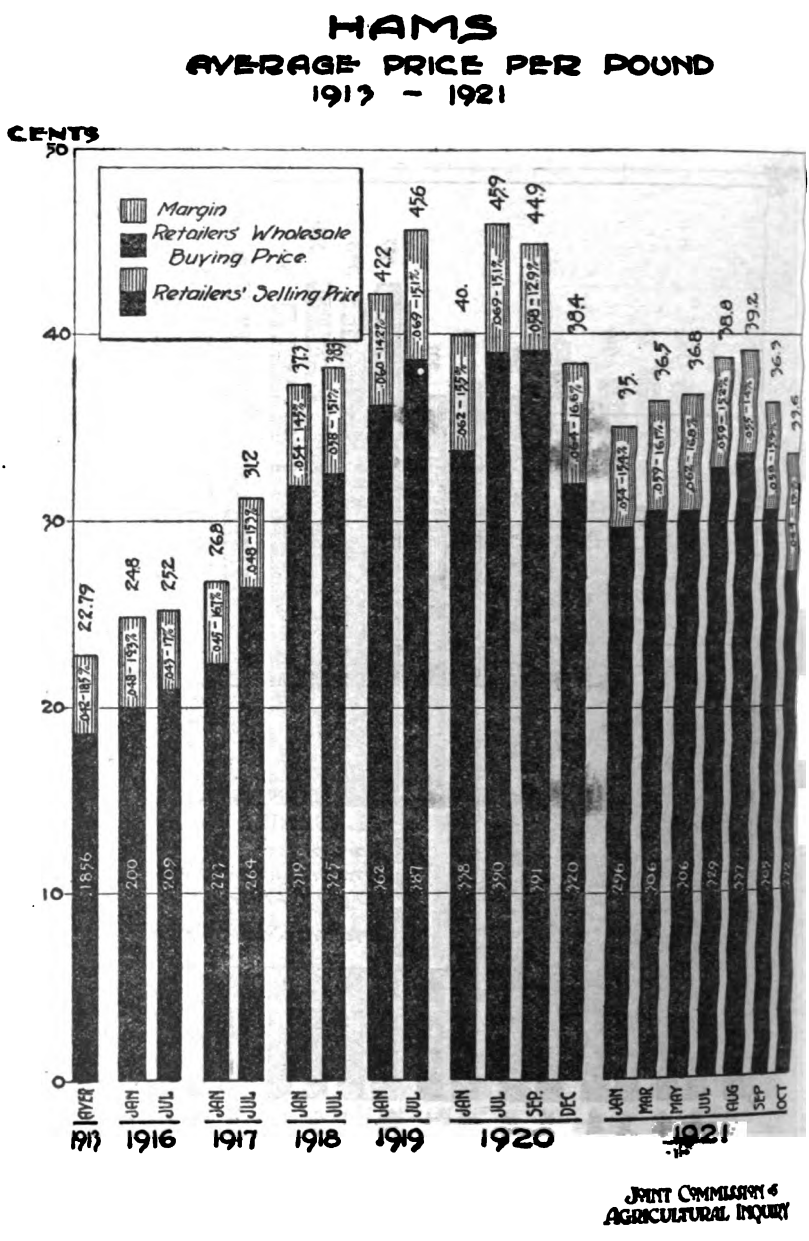
Digitized by Google

Chart D 16–J.



Digitized by Google

Chart D 16-K.

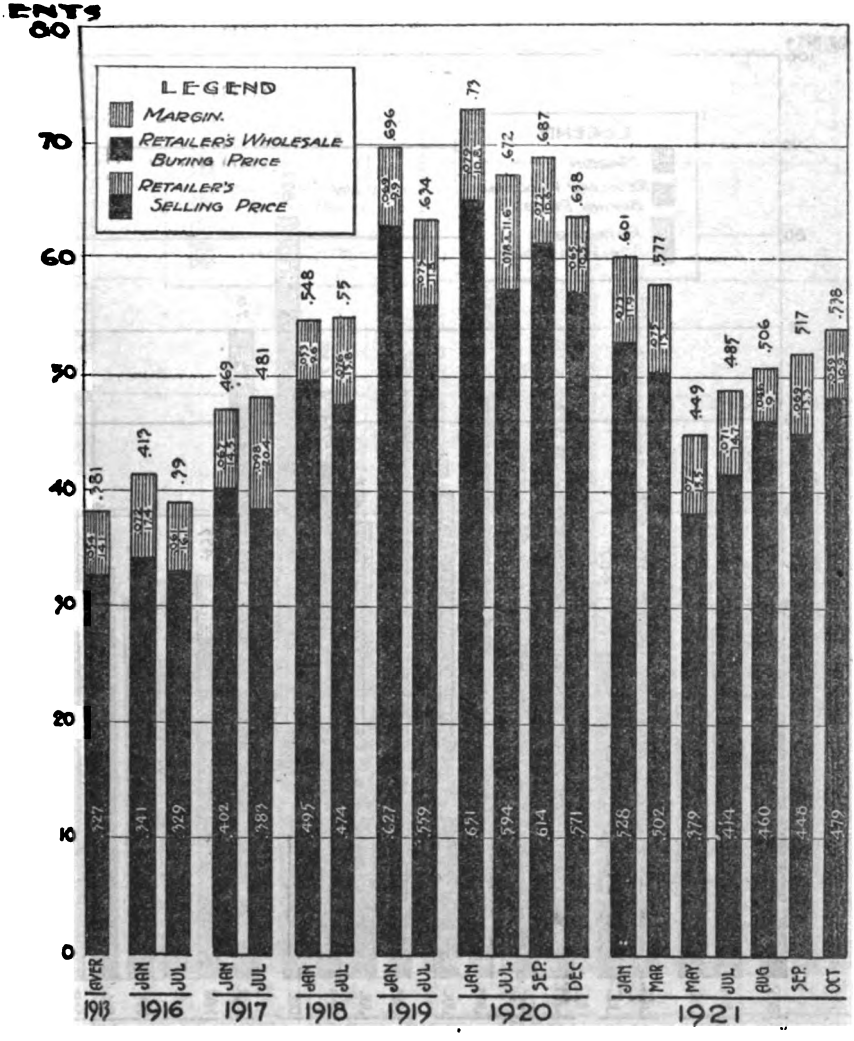


JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

Chart D 16–L.

CREAMERY BUTTER
AVERAGE PRICE PER POUND
1913 – 1921

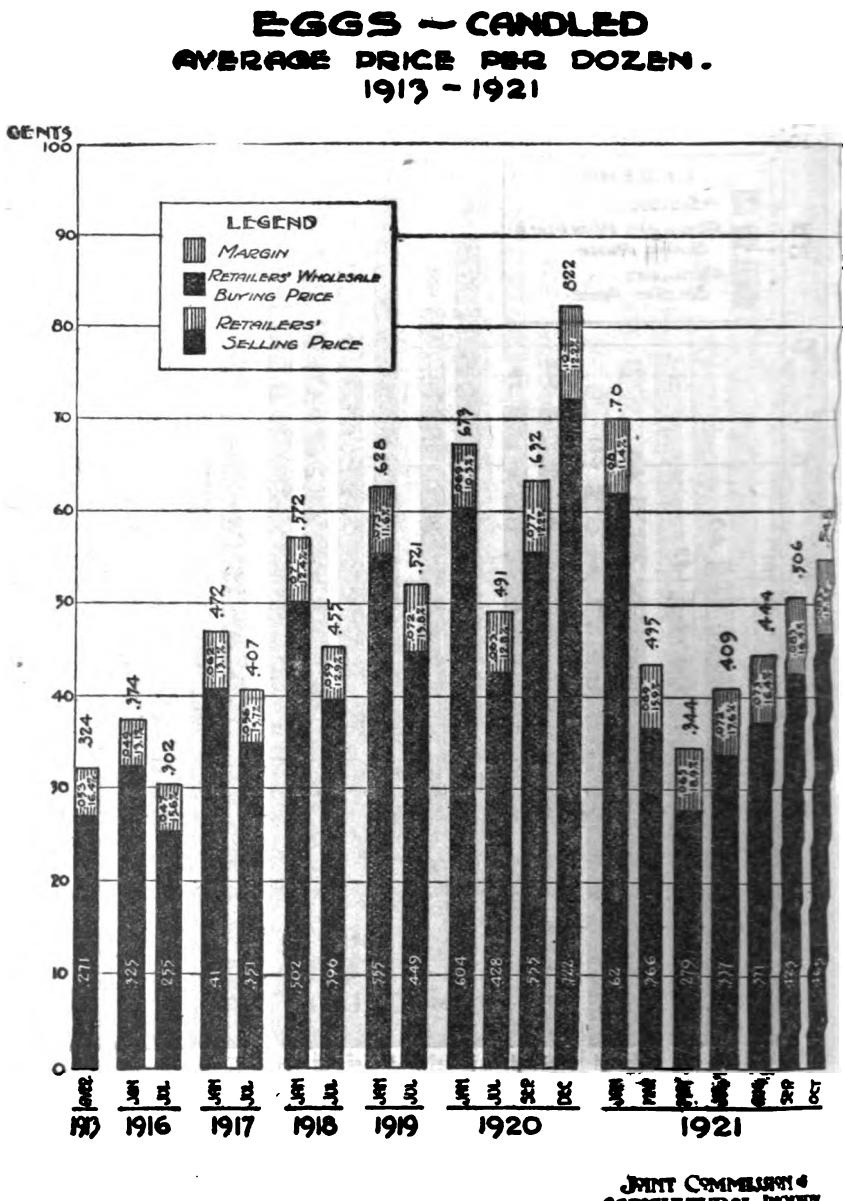


JOINT COMMISSION OF AGRICULTURAL INQUIRY

70678°—H. Rept. 408, pt. 4, 67-1——14

Digitized by Google

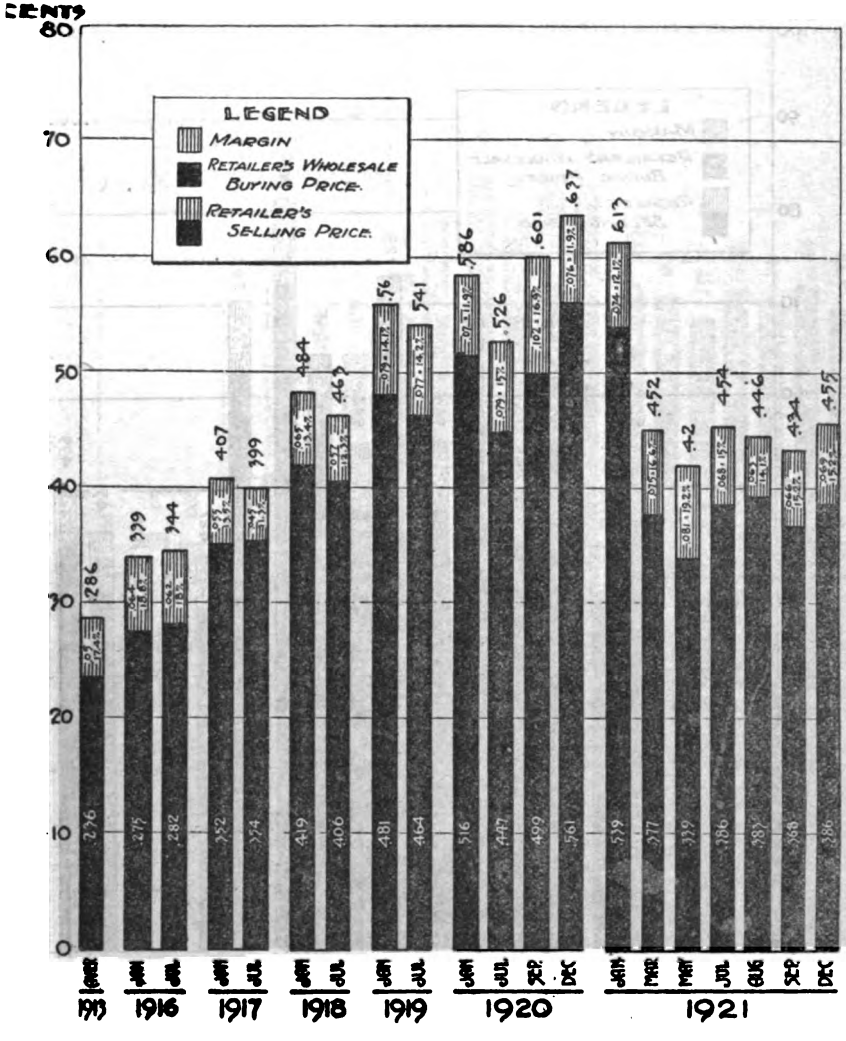
Chart D 16–M.



Digitized by Google

Chart D 16-N.

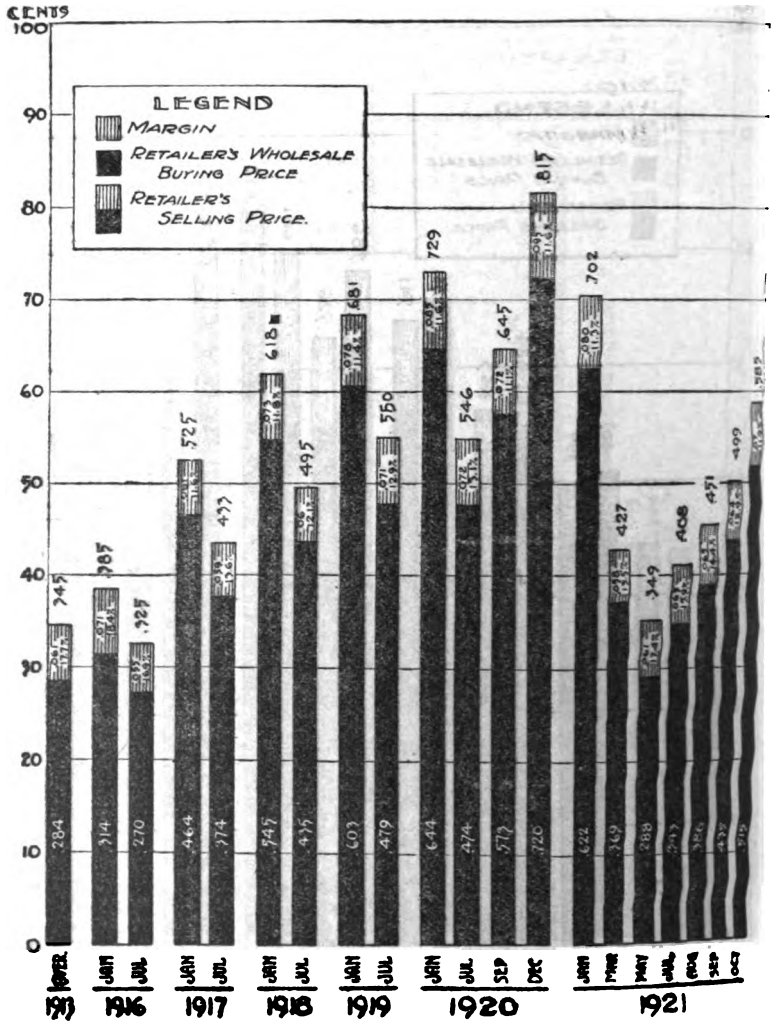
EGGS - STORAGE
AVERAGE PRICE PER DOZEN
1913 - 1921



Digitized by Google

Chart D 16-0.

EGGS - STRICTLY FRESH
AVERAGE PRICE PER DOZEN — 1913 - 1921



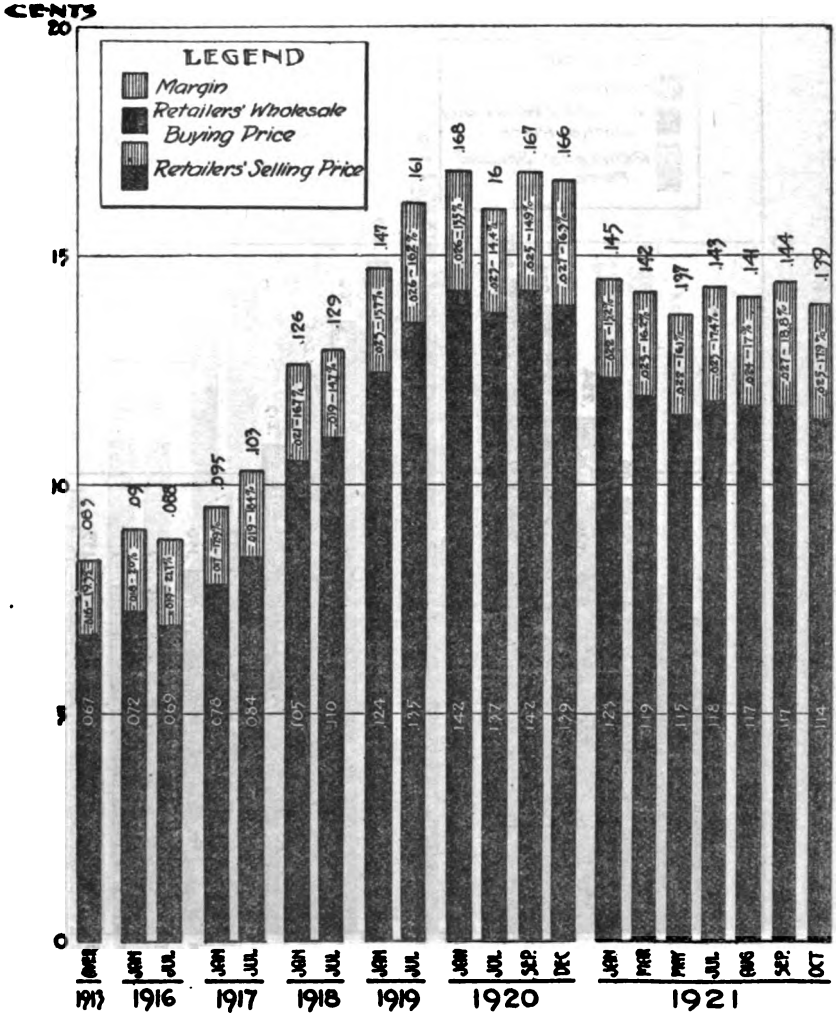
JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

Chart D 16–P.

MILK – FRESH

AVERAGE PRICE PER QUART – 1913 – 1921

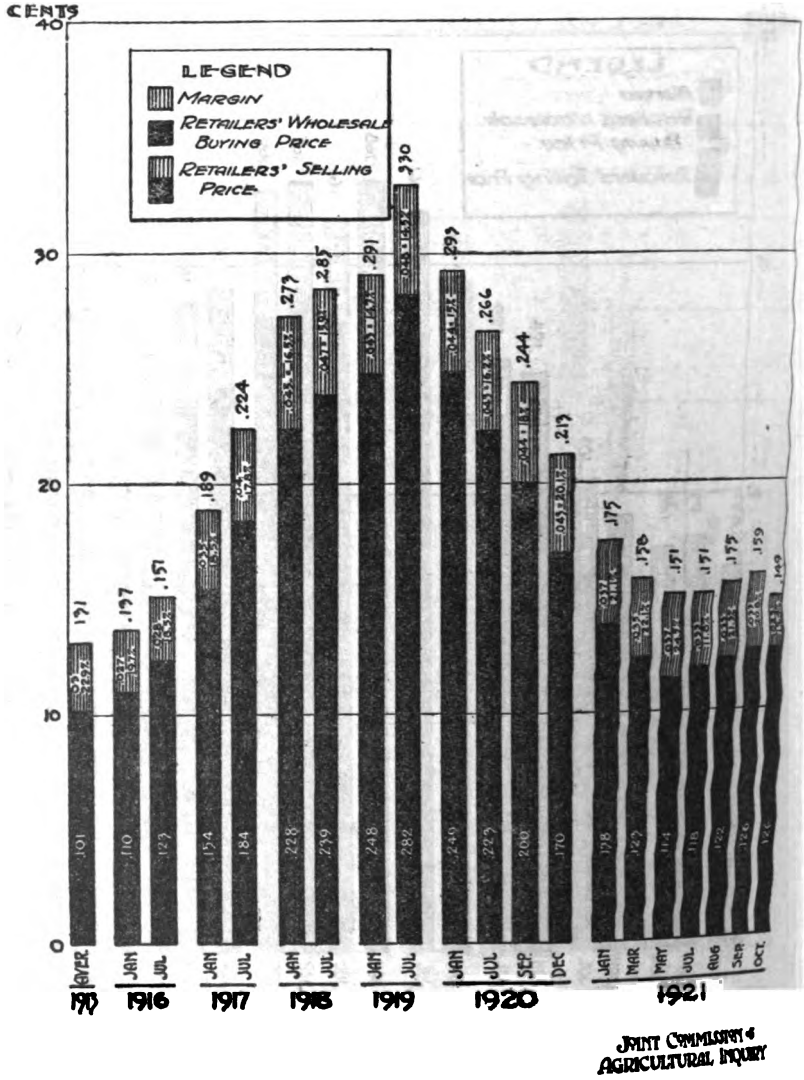


JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

Chart D 16-Q.

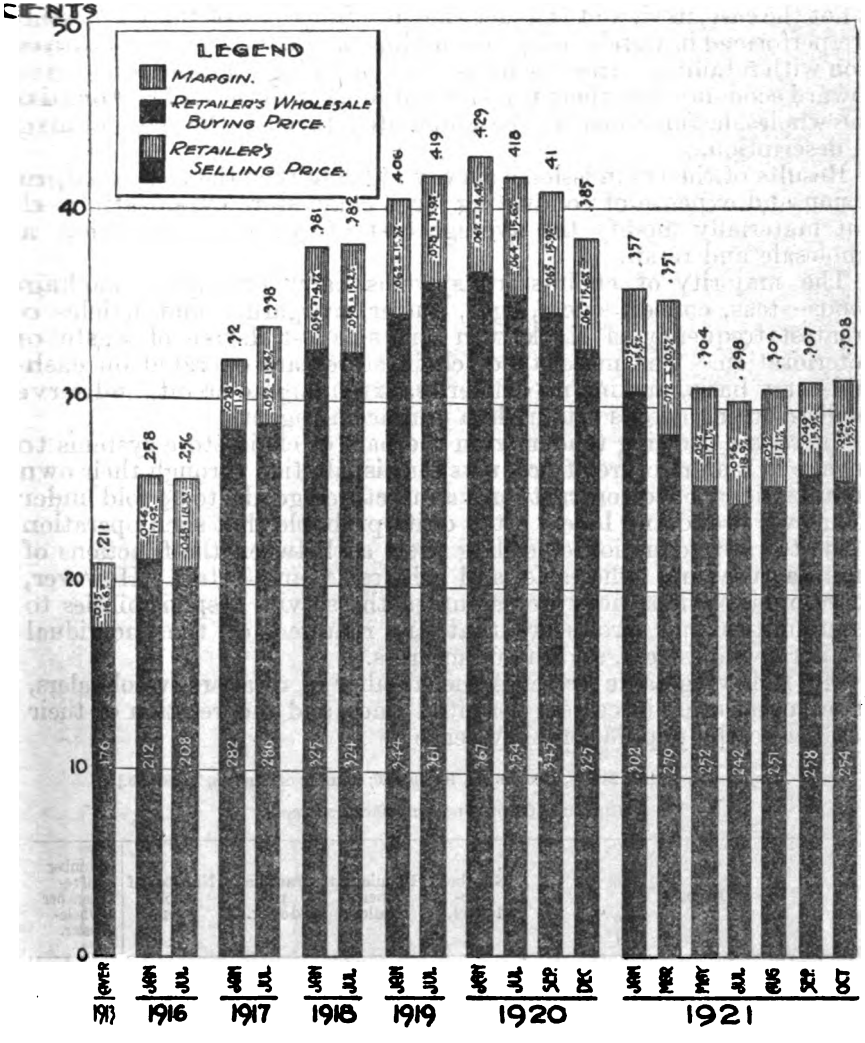
LARD ~ COMPOUND
AVERAGE PRICE PER POUND
1913 ~ 1921



Digitized by Google

Chart D 16-R.

OLEOMARGARINE
AVERAGE PRICE PER POUND
1913 - 1921



JOINT COMMISSION of AGRICULTURAL INQUIRY

Digitized by Google

There has been a considerable development of chain stores; that is, groups of stores operating under one ownership and general management, with individual managers conducting the several stores. These chain-store systems generally perform the functions of wholesaling as well as retailing, buying in quantities from manufacturers, storing, breaking bulk, and distributing to the branch stores from one or more central warehouses. The claim is frequently made that such organizations eliminate the expense of the wholesaler. This, however, is not the case, in view of the fact that the functions of the wholesaler are performed in warehousing, assembling, and distributing in connection with retailing. In some instances combining the functions tends toward economy, but there is no indication that the cost of performing the wholesale functions can be eliminated through the mere change in description.

Results of the commission's survey indicate that the cost of supervision and expense of conducting large chain-store organizations do not materially modify the average cost of grocery distribution at wholesale and retail.

The majority of chain-store systems carry principally package goods—teas, coffees, spices, eggs, butter, margarine, and articles of greatest frequency of stock turn and smallest degree of waste or deterioration. The majority of chain stores are operated on cash-and-carry basis, making no deliveries, extending no credit, and serve as distributing agents rather than purchasing agents.

There is a growing tendency on the part of chain-store systems to engage in manufacture of products for distribution through their own organizations, or to contract for manufactured goods, to be sold under their own brand and label. It is quite probable that such operation tends toward reduction of selling costs as between the functions of manufacture and wholesale and wholesale and retail. However, these organizations have not assumed the service responsibilities to communities and producers that are required of the individual retailers, wholesalers, and manufacturers.

The following table presents the number of retailers, wholesalers, or manufacturers in certain essential lines and the relation of their number to the population they serve:

[Population United States, 1920 census, 105,710,620; number of families, 24,351,676.]

[Bureau of Census and commercial sources.]

Item.	Number of retailers.	Population per dealer.	Families per dealer.	Number of wholesalers.	Number of retailers per wholesaler.
Groceries	334,212	315.3	72.6	5,950	56.3
Men's furnishings	40,399	2,616.6	602.7	[1] 5,247	[1] 7.6
Boots and shoes	141,867	745.1	171.6	[1] 1,450	[1] 97.8
Dry goods	35,207	3,002.5	691.5	2,780	12.6
Hardware	37,032	2,854.5	657.5	933	39.6

[1] Manufacturers.

NOTE.—Table includes exclusive stores and all sources from which commodities may be purchased at retail.

Digitized by Google

The figures contained in the foregoing table would indicate that there are a greater number of retail dealers in each line than can be successfully supported by the average number of families served.

The question develops as to whether or not a duplication of service adds to the cost to the community for the support of an unnecessary number of distributors.

The great number of people who engage in retailing find it easy to open a store with small capital and little or no experience. This is particularly true in retail groceries, as is evidenced by the fact that there is a retail grocery to serve every 72.6 families in the United States. That ambitious men should have a right to enter business goes without saying, nevertheless the mortality tables in business indicate that the majority do not attain success. The situation can only be improved through development of better educational opportunities in preparing for business.

Digitized by Google

Chapter IX.

TOTAL COST OF DISTRIBUTING CERTAIN COMMODITIES.

Charts D17 to D22 on pages 209 to 222 inclusive show a comparison of the cost of production and manufacture with the cost of distribution.

Chart D17 on the opposite page indicates that approximately 50 cents of the dollar the consumer pays for bread is absorbed in the cost of distribution, while the agricultural producer received an average of 29.6 cents for wheat in the local market out of the consumer's dollar in the years 1913, 1916, and 1921. His wheat is the substantial raw material element from which bread is made, but it has to be transported, handled through elevators, graded, sold to the miller, and converted into flour before it becomes prepared raw material, acceptable to the manufacturing baker. These combined services were performed during the period surveyed by the commission at an average cost of 8.43 cents per dollar of sales. The average cost of manufacture of flour into bread was 10.16 cents out of a dollar of sales.

The service element in the manufacturing baker's distribution of bread is a considerable factor in the cost to the consumer. His deliveries are made daily and his individual sales are comparatively small, measured in terms of dollars. It is quite possible that the consumer finds the convenience of being able to secure fresh bread daily of as great value as the commodity itself. Under modern living conditions many consumers find it inconvenient to do their own baking, and not infrequently more expensive in time, fuel and materials, than to buy manufactured bread at a price that includes cost of distribution. However, it seems possible that greater efficiency can be developed which will tend to reduce the manufacturing baker's selling cost and overhead and the retail grocer's operating expense. It does not appear that the manufacturing baker has exacted an undue profit in taking 5.7 cents from the consumer's dollar for manufacturing and distributing bread to the retailer.

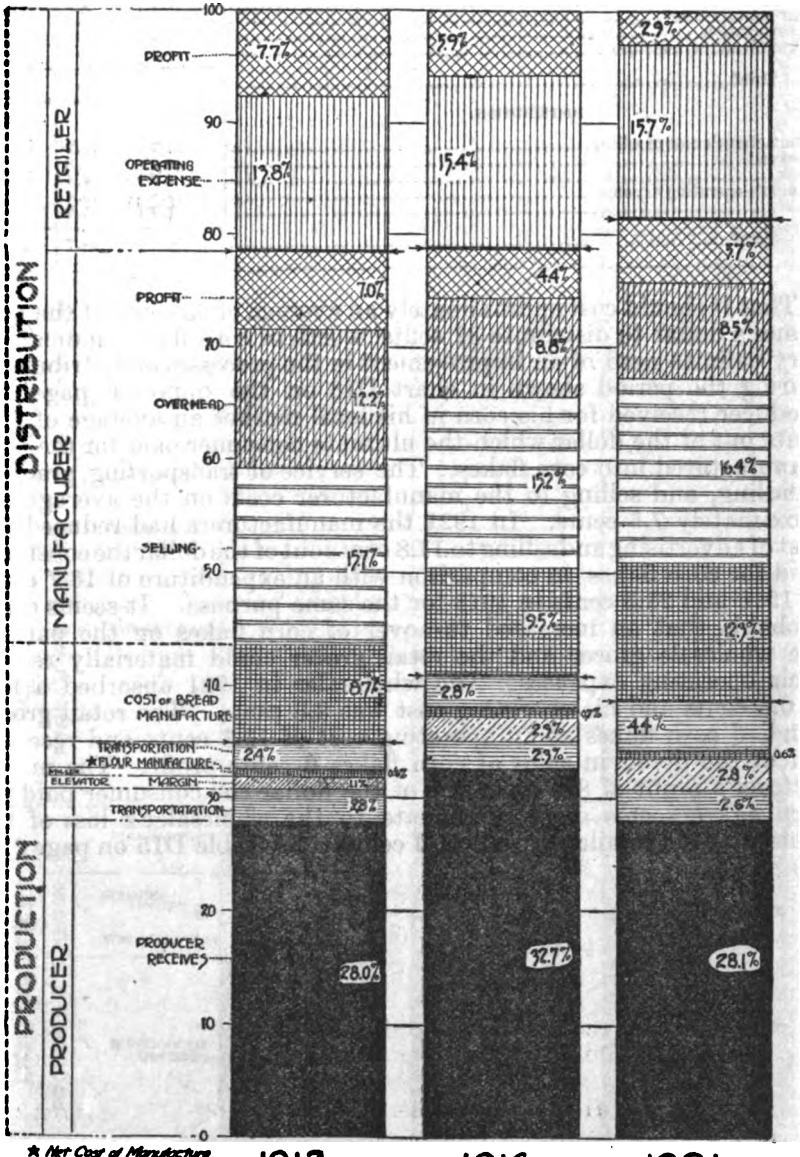
It would appear, however, that the retailer's average operating expense of 14.96 cents and the baker's average selling expense of 15.76 cents should be reduced by improvement of method. To some degree, consumer's demand for variety causes duplication of service on the part of several bakeries making daily deliveries to the same retailers. The competitive element among manufacturing bakeries in their effort to command markets naturally tends to increase the amount of service and the cost of selling. See Table D14 on page 210.

Digitized by Google

Chart D 17.

BREAD

DETAILED DISTRIBUTION OF THE CONSUMERS DOLLAR
BETWEEN THE
PRODUCER, MILLER, MANUFACTURER AND RETAILER



★ Net Cost of Manufacture and Distribution of Flour and Miller's Profit less return on By-products

JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE D14.—*Distribution of dollar consumer pays for bread.*

	1913	1916	1921
PRODUCTION.	*Cents.*	*Cents.*	*Cents.*
Producer receives	28.0	32.7	28.1
Transportation	2.8	2.3	2.6
Elevator margin and profit	1.1	2.3	2.8
Flour manufacture	.6	.7	.6
Transportation	2.4	2.8	4.4
Cost of bread manufacture	8.7	9.5	12.3
Total	43.6	50.3	50.8
DISTRIBUTION.			
Manufacturer's cost of selling	15.7	15.2	16.4
Overhead	12.2	8.8	8.5
Profit	7.0	4.4	5.7
Retailer's operating expense	13.8	15.4	15.7
Profit	7.7	5.9	2.9
Total	56.4	49.7	49.2

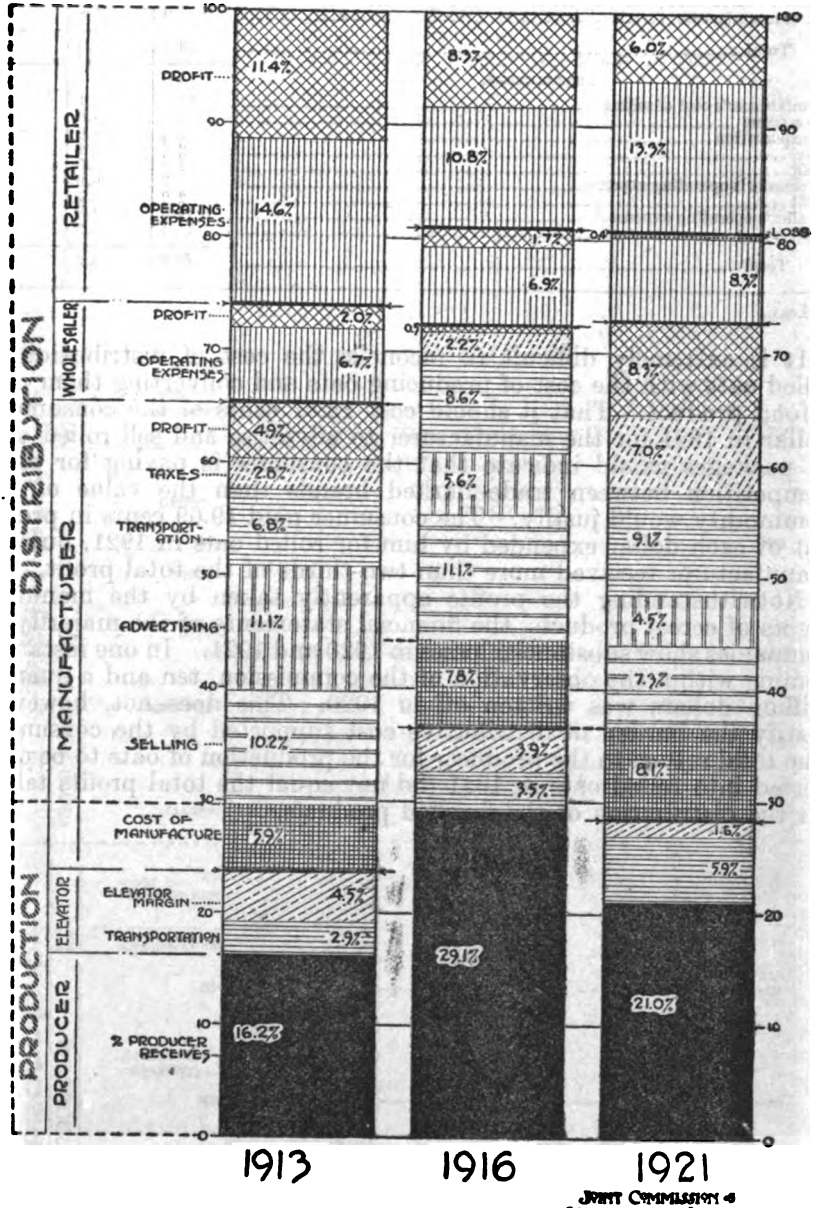
That it should cost approximately an average of 63 cents of the consumer's dollar to distribute 37 cents' worth of corn flakes, indicates a very definite need of an improvement in the processes of distribution. During the period shown in chart D18 on the opposite page the producer received for his corn in his local market an average of 22.1 cents out of the dollar which the ultimate consumer paid for the corn manufactured into corn flakes. The service of transporting, grading, handling, and selling to the manufacturer costs on the average approximately 7.5 cents. In 1921 the manufacturers had reduced the cost of advertising and selling to 11.8 cents out of the dollar the consumer paid for corn flakes, in comparison with an expenditure of 16.7 cents in 1916 and 21.3 cents in 1913 for the same purpose. It seems quite probable that an increased turnover of corn flakes on the part of the wholesale grocer and the retail grocer could materially reduce their operating expenses. The wholesaler in 1921 absorbed a loss of 0.4 cents and his operating cost was 8.3 cents. The retail grocer handled corn flakes at an operating cost of 13.3 cents and received out of the dollar in sales of corn flakes 6 cents profit. The manufacturer's profit of 8.3 cents out of the dollar the consumer paid for corn flakes seems disproportionate to the wholesaler's loss of 0.4 cents and the retailer's profit of 6 cents. See table D15 on page 212.

Digitized by Google

Chart D 18.

CORN FLAKES

DETAILED DISTRIBUTION OF THE CONSUMERS DOLLAR BETWEEN THE PRODUCER, MANUFACTURER, WHOLESALER AND RETAILER



JOINT COMMISSION OF AGRICULTURAL INQUIRY

Digitized by Google

TABLE D15.—*Distribution of dollar consumer pays for corn flakes.*

	1913	1916	1921
PRODUCTION.	*Cents.*	*Cents.*	*Cents.*
Producer receives	16.2	29.1	21.0
Transportation	2.9	3.5	5.9
Elevator margin and profit	4.5	3.9	1.6
Cost of manufacture	5.9	7.8	8.1
Total	29.5	44.3	36.6
DISTRIBUTION.			
Manufacturer's cost of selling	10.2	11.1	7.3
Advertising	11.1	5.6	4.5
Transportation	6.8	8.6	9.1
Taxes	2.8	2.2	7.0
Profit	4.9	.5	8.3
Wholesaler's operating expense	6.7	6.9	8.3
Profit	2.0	1.7	[1].4
Retailer's operating expense	14.6	10.8	12.3
Profit	11.4	8.3	6.0
Total	70.5	55.7	63.4

[1] Loss.

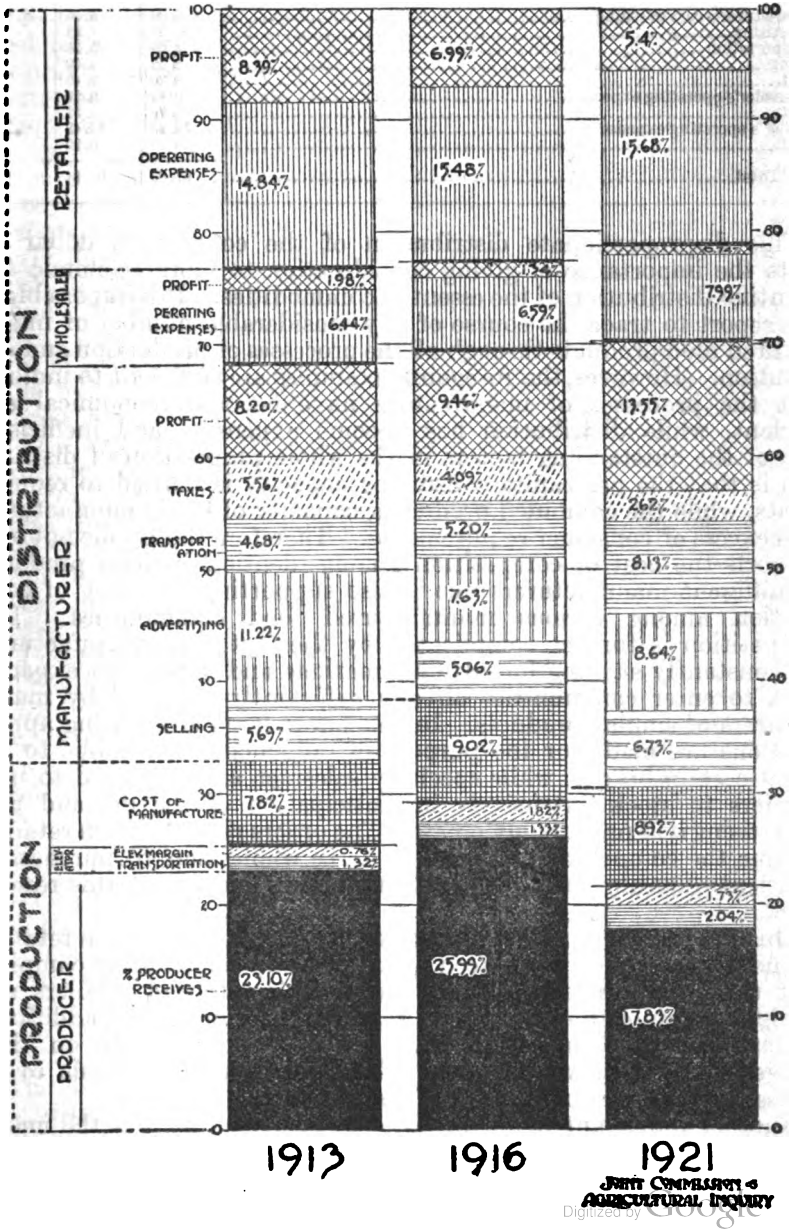
It is extremely difficult to reconcile the cost of distribution of rolled oats with the cost of producing oats and converting them into a food product. That it should cost 15.37 cents of the consumer's dollar in 1921 for the manufacturer to advertise and sell rolled oats in packages would indicate that the consumer is paying for more competition between trade-marked brands than the value of the commodity would justify. The consumer paid 19.69 cents in profits out of each dollar expended by him for rolled oats in 1921, but the manufacturer received more than two-thirds of the total profit.

Notwithstanding the profits apparently taken by the manufacturers of cereal products, the financial statements of the majority of companies show substantial losses in 1920 and 1921. In one instance, coming within the observation of the commission, ten and a quarter million dollars was written off in 1920. This does not, however, justify the burden of distributive cost supported by the consumer. The total return to the producer for the production of oats to be converted into rolled oats in 1921 did not equal the total profits taken for the distribution of the finished products.

Digitized by Google

A study of Chart D19 below indicates that for the period surveyed by the commission it cost 66.16 cents to distribute rolled oats costing 33.84 cents to produce. See table D16 on page 214.

Chart D 19.



Digitized by Google

TABLE D16.—*Distribution of dollar consumer pays for rolled oats.*

	1913	1916	[illegible]
PRODUCTION.	*Cents.*	*Cents.*	*Cents.*
Producer receives	23.10	25.99	12.9
Transportation	1.32	1.33	2.8
Elevator margin and profit	.76	1.82	1.7
Cost of manufacture	7.82	9.02	4.2
Total	33.00	38.16	21.6
DISTRIBUTION.			
Manufacturer's cost of selling	5.69	5.65	4.7
Advertising	11.22	7.61	4.4
Transportation	4.66	5.20	4.1
Taxes	5.56	4.09	2.2
Profit	8.29	9.45	11.5
Wholesaler's operating expense	6.44	6.59	7.8
Profit	1.98	1.34	.7
Retailer's operating expense	14.84	15.46	15.2
Profit	8.30	6.99	5.4
Total	67.00	61.84	62.4

This disproportionate distribution of the consumer's dollar reflects the importance of giving consideration to more economic and scientific distribution of the essential commodities. It is impossible in this report to trace the course of any considerable number of manufactured food products through all the processes of production and distribution. However, the foregoing examples are sufficient to indicate that the processes of manufacture have become economical and efficient, while distribution has become expensive and inefficient. One of the outstanding factors in the whole proposition of distribution is that the per capita consuming capacity is limited to requirements, while the combined producing capacity of food manufacturers is in excess of consumer requirements. Therefore the public not only supports the cost of competition among identical articles produced by different manufacturers but is also supporting the cost of competition among various manufactured food commodities. This competition is further complicated by the fact that manufacturers are constantly striving for national markets and make vast expenditures to enter communities already sufficiently supplied by manufacturers of similar products. In this effort large advertising appropriations are made for the purpose of influencing the public to demand certain brands, while specialty salesmen are employed to urge retailers to stock extensively in anticipation of the demand that advertising will presumably create. The orders received from retailers become the compelling argument to force wholesalers to purchase in sufficient quantity to fill the retailer's orders and afford this reserve stock.

This process, however, is not uniformly successful because retailers frequently cancel orders placed with specialty salesmen or complain that the order was not actually given. Overstocked retailers and wholesalers are disposed to discourage the introduction of additional merchandise in competition with unsold goods already on their shelves or in their warehouses. This entire situation tends to increase the total cost of selling and distribution.

Another important factor in the cost of distribution is the manufacturer's desire to secure a large volume of production and dispose

Digitized by Google

of it in maximum quantities. This tends to overload wholesalers and retailers, retarding their stock turn, and consequently increasing operating cost.

When the wholesalers and retailers become overstocked with any manufacturer's product it creates a dam across the channel of distribution for that particular manufacturer and he can have no outlet until the public has bought and consumed the surplus stock. When the activities of a number of manufacturers duplicate each other to produce this effect they exhaust the capital and credit resources of the wholesalers and retailers, with the result that stock must be turned into money at a sacrifice, while the manufacturers are compelled for an interval to discontinue operation. This results in the discharge of help, and creates a situation of unemployment that is reflected in the consuming market in diminished purchasing power, tending further to delay the reduction of surplus stock. Any improvement in the existing situation must necessarily come as a result of a better adjustment between manufacturing output and the public's capacity to consume and repurchase.

Economical distribution can be secured only when there is a steady, orderly flow of products through the channels of distribution in response to consumer demand. An effort to force goods through the channels of distribution invariably leads to congestion, and intermittant periods of production and idleness, which are reflected in cycles of prosperity and depression.

The existing methods of distribution can not be materially influenced by any individual firm or corporation acting alone, nor can any individual firm or corporation be specifically arraigned for conforming to prevailing methods in the face of severe competition. However, individual concerns can in reasonable measure modify cost to the ultimate consumer by adopting such policies in production and distribution as will permit and encourage a steady, orderly flow of their merchandise through the stores of the wholesaler and the retailer in such quantities as will afford opportunity for frequency of stock turn and a consequently reduced burden of operating overhead cost against the unit of merchandise.

Wholesale grocers are not invariably efficient and can do much to modify the cost of operation by creating a greater efficiency of stock turn. In some instances, the wholesaler operates on a speculative basis and purchases in large quantities in anticipation of future demand at increased prices. While the majority of wholesale grocers serve retailers within a radius of 75 miles, there are a number who extend their activities over considerable distances, with an additional cost of selling and operation. Some wholesale grocers, in addition to distributing the products of manufacturers, enter into competition with manufacturer's goods by putting out private brands under their own label. It is difficult for a wholesaler fairly to represent a manufacturer whose products are in competition with similar goods under the wholesaler's private label. In any case, it leaves room for suspicion on the part of the manufacturer that his goods are not being fairly represented by the wholesaler.

The average retail grocer too frequently permits himself to overbuy, with the result that he fails to secure the frequency of stock turn that would place the smallest possible percentage of operating

Digitized by Google

expense against the individual item of merchandise which he carries in stock.

When the retail grocer buys beyond the requirements of his customers in anticipation of advancing prices, he becomes a speculator, and assumes all of the risks that attach to rising and falling prices. It is seldom that a retail grocer has sufficient knowledge of supply and demand to intelligently determine price tendencies. He is influenced almost entirely by salesmen representing manufacturers and wholesalers who offer inducements of probable price increases or special discounts or probable increased demand to result from advertising campaigns, etc.

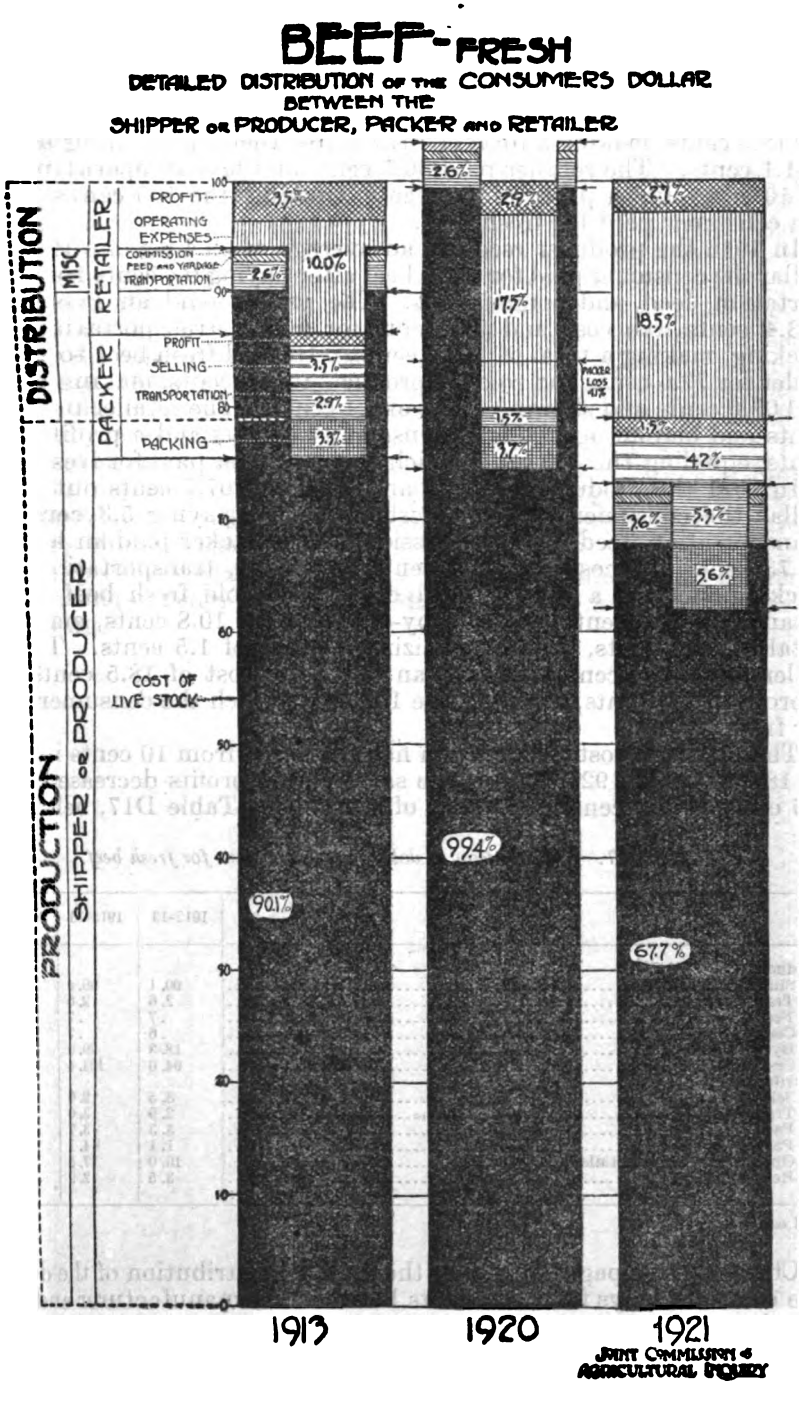
Consumers seldom buy groceries less frequently than 52 times a year and in large centers they buy as often as 300 times per year. Under modern living conditions facilities do not exist in the average home for the care and conservation of considerable quantities of groceries. In the populous sections of the country it is seldom that a retail grocer is located at a greater distance than 50 miles from the warehouses of the wholesaler, while the majority of grocers are located within 25 miles of the reserve stocks carried in wholesale warehouses. The commission's survey shows that the average grocer turns his stock 8 times in 12 months. This indicates that he carries six and one-half weeks' supply when ordinarily a two weeks' supply would afford ample local reserve. This can not be applied to all merchandise alike, but under average conditions the retail grocer with a reasonable knowledge of the requirements of his community can double his present frequency of turnover and very materially modify his operating expense. The average grocer operates with comparatively small capital which quickly becomes absorbed in surplus merchandise.

This frequently places him under credit obligation to a wholesaler and restrains him from buying to the greatest advantage. When the retail grocer permits his capital to become entirely absorbed, either in surplus stock or in an overextension of credit, he loses the benefit of cash discounts and other advantages that tend toward economical merchandising.

Chart D20 on page 217 shows detailed distribution of the consumer's dollar for fresh beef among the shipper or producer, packer and retailer.

Digitized by Google

Chart D 20.



Digitized by Google

Chart D20 shows that in 1913 the shipper or producer received an average of 90.1 cents out of the dollar the consumer paid for fresh beef after paying 3.9 cents for transportation, feed, and commissions. The packer paid 94 cents live cost and 9.7 cents for selling, transportation, and packing, making a total of 103.7 cents. He sold fresh beef to the retailer at 86.5 cents and sold by-products for 18.3 cents, making a total of 104.8 cents, thereby realizing a profit of 1.1 cents. The retailer paid 86.5 cents and had an operating cost of 10 cents and a profit of 3.5 cents, equaling the 100 cents which the consumer paid for fresh beef.

In 1916 the producer received an average of 99.4 cents out of the dollar the consumer paid for fresh beef after paying 0.4 cents for transportation, feed, and commissions. The packer paid an average of 103.4 cents live cost and 9.3 cents for selling, transportation, and packing, making a total of 112.7 cents. He sold fresh beef to the retailer for 79.6 cents and sold by-products for 29 cents, making a total of 108.6 cents and showing a loss of 4.1 cents. The retailer paid 79.6 cents and had an operating expense of 17.5 cents and a profit of 2.9 cents, equaling the 100 cents which the consumer paid for fresh beef.

In 1921 the producer received an average of 67.7 cents out of the dollar the consumer paid for fresh beef after paying 5.3 cents for transportation, feed, and commissions. The packer paid an average of 73 cents live cost and 15.1 cents for selling, transportation, and packing, making a total of 88.1 cents. He sold fresh beef to the retailer at 78.8 cents and sold by-products for 10.8 cents, making a total of 89.6 cents, thereby realizing a profit of 1.5 cents. The retailer paid 78.8 cents and had an operating cost of 18.5 cents and a profit of 2.7 cents, equaling the 100 cents which the consumer paid for fresh beef.

The retailer's cost of operation had increased from 10 cents in 1913 to 18.5 cents in 1921, and in the same period profits decreased from 3.5 cents to 2.7 cents per dollar of sales. See Table D17, below.

TABLE D17.—*Distribution of dollar consumer pays for fresh beef.*

	1912–13	1915–16	1920–21
Production:			
Shipper receives	90.1	99.4	67.7
Transportation	2.6	2.6	3.6
Feed	.7	.7	.8
Commissions	.6	.7	.9
By-products	18.3	29.0	10.8
Cost live	94.0	103.4	73.0
Distribution:			
Selling	3.5	2.6	4.2
Transportation	2.9	3.0	5.3
Packing expense	3.3	3.7	5.6
Packers' profit	1.1	[1] 4.1	1.5
Operating expense (retailer's)	10.0	17.5	13.5
Retailer's profit	3.5	2.9	2.7

[1] Loss.

Chart D21 on page 220 shows the detailed distribution of the dollar the consumer pays for men's suits between the manufacturer and the retailer.

Digitized by Google

The chart shows that while the proportionate cost of cloth and trimming to the dollar the consumer pays was lower in 1921 than in 1913, the cost of manufacture had increased 3.5 cents; the cost of operation had increased 2.3 cents; the manufacturer's profit decreased 3.5 cents, while the retailer's operating expense had increased 7.9 cents, and his profit had decreased 8.3 cents per dollar of sales. See Table D18, on page 221.

There are certain noneconomic factors in the manufacture and distribution of clothing. Men express their personal taste in their selection of clothes and can not be satisfied with a uniform product; therefore the purchase price of a suit of clothes includes an intangible element termed "style." It is this factor that most definitely influences the selling cost on the part of the manufacturer and the operating expense on the part of the retailer. Style is not confined to shape and workmanship, but involves fabrics, colors, patterns, linings, trimmings, etc. The element of style is a psychological factor that can not be predetermined by weavers, manufacturers, or retailers. However, there is a constant effort on the part of cloth makers and manufacturers to produce an article that will attract popular fancy, and to a degree an effort is made to create public favor with reference to certain articles or groups of articles. This is less apparent in men's clothing than in women's apparel.

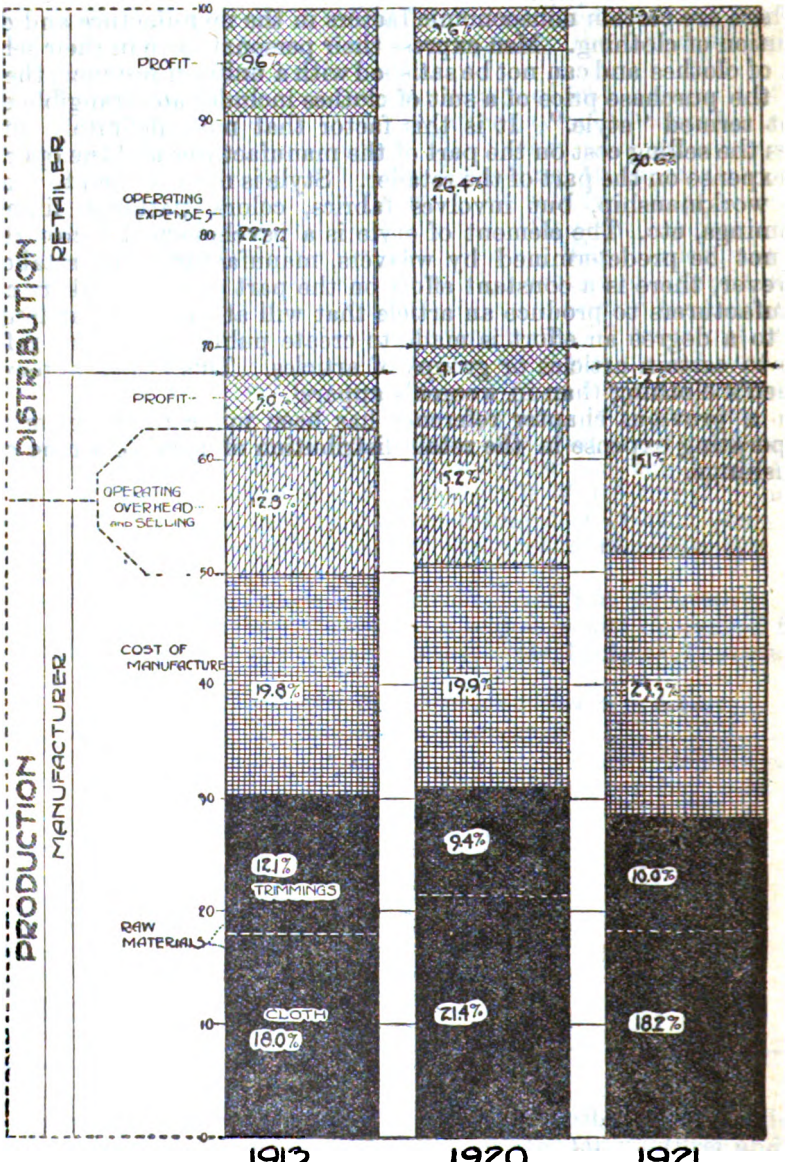
In a previous chapter reference has been made to the elements of operating expense in the retail distribution of men's clothing and furnishings.

Digitized by Google

Chart D 21.

MENS SUITS

DETAILED DISTRIBUTION OF THE CONSUMERS DOLLAR BETWEEN THE MANUFACTURER AND RETAILER



Digitized by Google

TABLE D18.—*Distribution of dollar consumer pays for men's clothing.*

	1913	1920	1921
Production:			
Raw material (cloth)	18.0	21.4	18.2
Raw material (trimmings)	12.1	9.4	10.0
Cost of manufacture	19.8	19.9	23.3
Overhead—Operation	12.8	15.2	15.1
Profit	5.0	4.1	1.5
Distribution:			
Retailer's operating expense	22.7	26.4	30.6
Profit	9.6	3.6	1.3

Digitized by Google

Chart D22, below, shows the detailed distribution of the consumer's dollar for men's shoes between the manufacturer and retailer, reflecting a situation somewhat similar to the distribution of clothing. See Table D19 on opposite page.

Chart D 22.

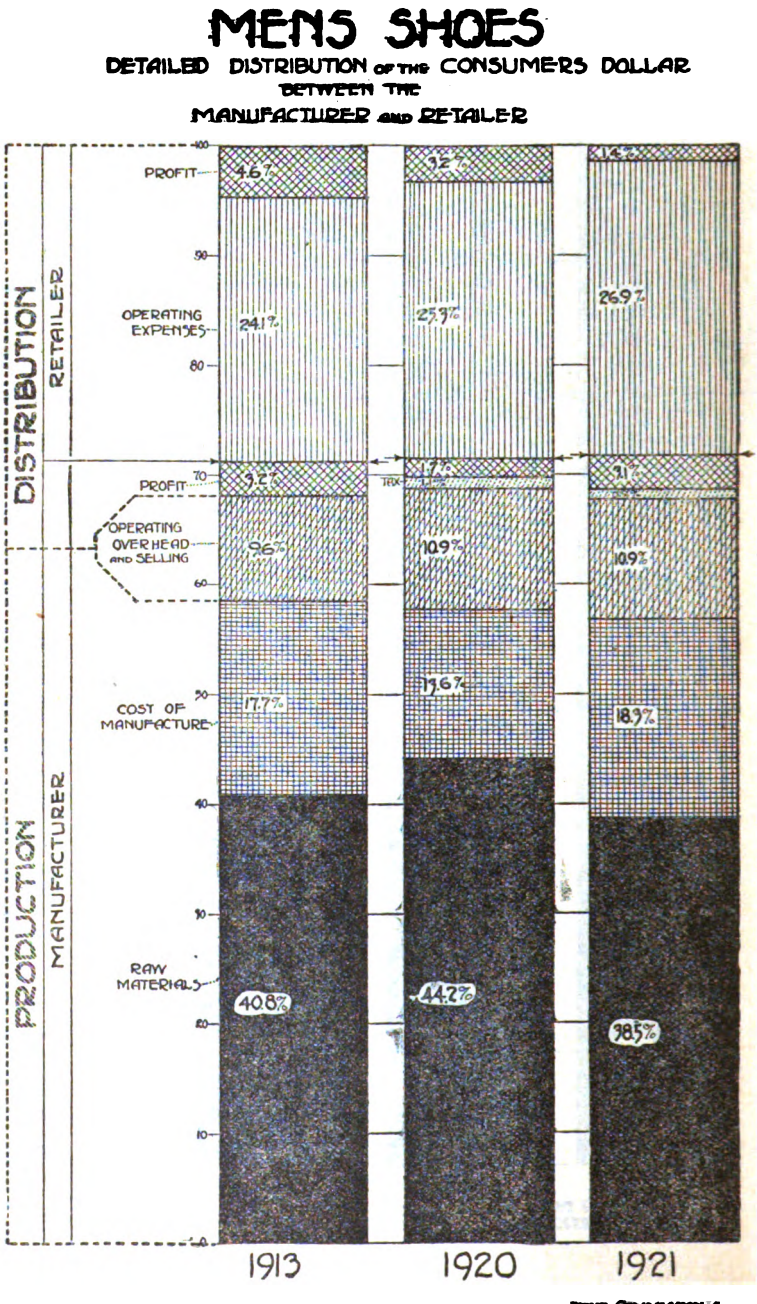


TABLE D19.—*Distribution of dollar consumer pays for men's shoes.*

	1913	1920	1921
Production:			
Raw materials	40.8	44.2	38.5
Cost of manufacture	17.7	13.6	18.3
Operating overhead and selling	9.6	10.9	10.9
Taxes		1.1	.9
Profit	3.2	1.7	3.1
Distribution:			
Retailer's operating expense	24.1	25.3	26.9
Profit	4.6	3.2	1.4

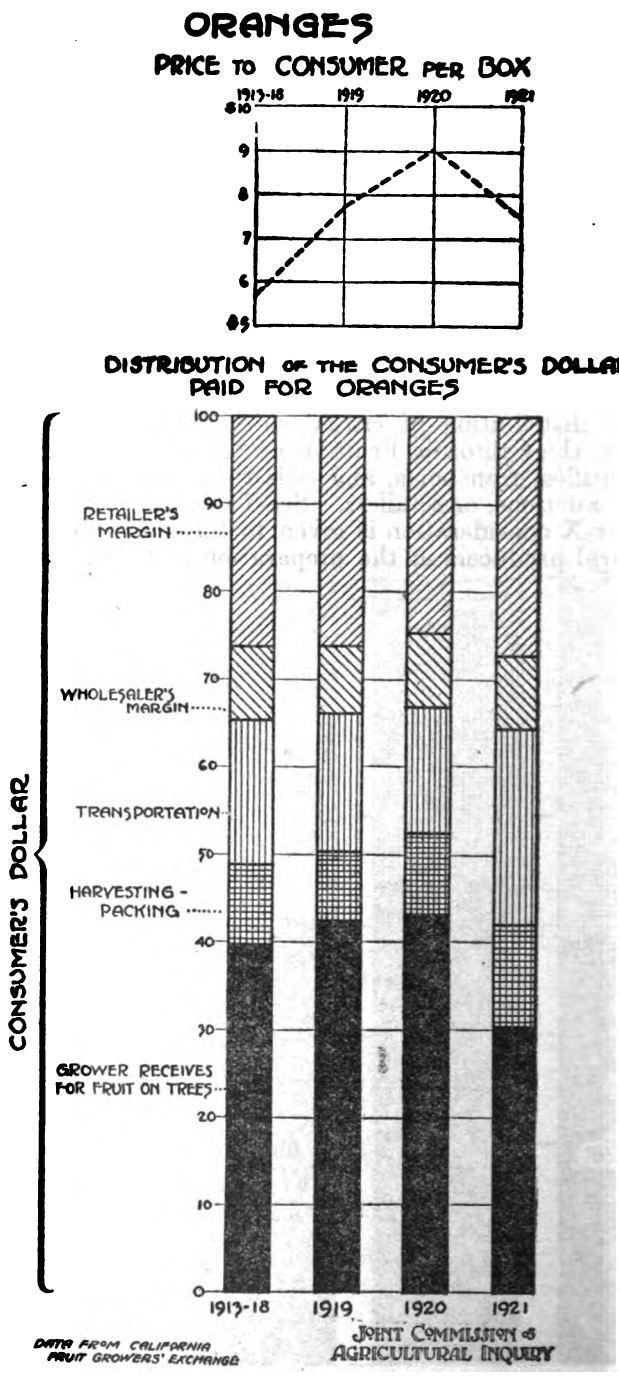
Chart D23 on page 224, prepared from data supplied by the California Fruit Growers' Exchange, shows the detailed distribution of the dollar paid by the consumer for oranges during the five years 1913–1918 and the crop years 1919–1921.

The chart shows the effect of organized cooperation in the preparation and distribution of citrus fruit. Operating as a business organization, the California Fruit Growers' Exchange grades, standardizes, identifies, transports, and sells the crops of its members to wholesalers, auctions, or retailers. See Table D20 on page 225.

In chapter X consideration is given to the subject of cooperation of agricultural producers in the preparation and marketing of their product.

Digitized by Google

Chart D 23.



Digitized by Google

TABLE D20.—*Distribution and grower's returns of California oranges.*

	5-year average, 1913–1918.		Dec. 1, 1918, to Nov. 15, 1920.		Dec. 1, 1919, to Nov. 15, 1920.		Dec. 1, 1920, to Nov. 15, 1921.	
	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
Growers received for fruit on tree	$2.265	100	$3.277	144.7	$3.890	171.7	$2.30	101.5
Harvesting, packing, and selling, paid by the exchange	.514	100	.640	118.6	.870	169.2	.960	171.2
Transportation	.935	100	1.187	126.9	1.252	133.9	1.62	173.3
Government tax			.036		.033		.05	
Wholesaler's margin	.48	100	.59	122.9	.75	156.2	.64	127.1
Retailer's margin	1.50	100	2.02	134.6	2.25	150.0	2.06	137.3
Consumer paid	5.69	100	7.72	135.7	9.05	158.9	7.52	132.2

Digitized by Google

Chapter X.

COOPERATIVE MARKETING.

There has been a very large growth in sales through farmers' cooperative marketing associations in recent years. Statistics compiled by the Bureau of the Census show that in 1919, $721,983,639 worth of farm products were sold through farmers' cooperative associations, and that 7.9 per cent of all farms in the country made sales through such organizations. Purchases through farmers' organizations represent a considerably smaller amount, the total of such purchases in 1919 being $84,615,669.

Cooperative associations have been made use of for the purpose of manufacture and sale of dairy products for many years. The more recent developments, however, have related to the sale of fruits and apples, and still more recently to sales of cotton and grain.

Thirty-five States now have laws under which farmers' cooperative organizations may be organized. The laws of the States relating to cooperative organizations vary widely, both in respect to form of organization and powers and liabilities of the organizations as well as of its members.

The fundamental difference between the farmer's cooperative organization and the industrial corporation organized for profit is that the control in the latter case as well as the dominating influence is capital, while in the former the controlling and dominating influence is membership. The first essential of cooperative organization is the will on the part of the members to cooperate and a recognition of the necessity and advantage of cooperative effort, and a thorough understanding of the principles as well as of the requirements and advantages of cooperative organization.

The local farmer's cooperative organization is essentially a community institution and its advantages are as much civic and social as economic. Local community cooperative associations may be and frequently have been combined into larger associations in which the local associations have membership, in substantially the same way as individuals are members of the local associations. The farmer has been naturally intensely individualistic by reason of his isolation. He is slow to surrender his individual judgment and advantage for the mutual advantage of himself and his fellow farmers. His individualism and islolation as well have not permitted the development of the same degree of leadership or disposition to follow leadership as has been developed in the industrial world. The cooperative organization and the larger scale operations which it permits gives opportunity for the development of community leadership along economic lines.

Since the cooperative association is essentially a community institution, cooperatives ordinarily succeed best upon the basis of local organization and local cooperative units and the amalgamation of local associations into larger associations should not take away from

Digitized by Google

the local organization the peculiar advantages of its production area, location, climate, or other advantages. The local organization is also necessary to the continuance of the interest of the members, which is essential to successful cooperation. A member should be made to feel that he has a part in the management and direction of the association, and that the association is a means of enabling him to do his own business more efficiently and with greater profit, rather than an institution doing business for him and with which he has no direct connection or concern.

The organization should provide for the participation of the membership in the affairs of the organization and a recognition on the part of the management that the business is the business of the members who are directly concerned in the method and manner of conducting it.

There is no inherent virtue in cooperation which will make a cooperative organization successful without the application of the sound principles necessary to the success of private agencies. To succeed, a cooperative organization must have competent management experienced and skilled in the technique of the business in which the cooperative association engages. In addition, the management must be thoroughly in sympathy with the idea of industrial democracy of cooperative organizations and must at all times keep in mind the character of the constituency which it represents.

The farmer should realize that the handling, grading, sorting, selling, and processing of his product in volume requires a high degree of business judgment, knowledge of trade practices, and technical skill which must either be hired at a cost commensurate with the degree of ability, knowledge, and skill required or developed within the organization at the risk of losses through inexperience and bad management.

There is no standard form of cooperative organization which can be applied to the sale and distribution of farm products under all the varied conditions which may exist in the production and sale of any of them. The form of cooperative organization adopted should be determined after a careful survey of the problem to be solved and the business activities to be engaged in. This survey should include a careful estimate of the volume of business which can be obtained and this volume should be assured by obtaining the necessary term membership contracts.

The survey should also cover the relationship of the association to the distributive agencies and the market which exists or can be developed for the production.

Briefly, the factors upon which the form of organization depends should be thoroughly ascertained in advance of determination of the kind of organization to be adopted.

The obligation to the member of the farmer's cooperative association to use the facilities in handling his product and the member's general relationship to the association should be established by a contract running over a period of years. The essence of any sound sales policy is in the creation of continuous volume, which in the case of a cooperative organization can only be secured by a membership contract. The contract may be subject to cancellation by the member at stated intervals upon sufficient notice to permit the

Digitized by Google

organization to make the adjustments incident to the cancellation of the contract.

The farmer's cooperative association should have adequate capital, which should be furnished by the membership and should be kept progressively proportioned to the contributions of the members to the business of the association and the use made of the association's facilities by them. The capital should be sufficient to supply a reasonable proportion of the fixed investment and operating capital in order to establish the financial soundness of the association, and to create a basis for the additional credit required for marketing operations.

Many cooperative associations also undertake to create a reserve against periods when the volume of business is small or against price declines incident to periods of depression. Credit for marketing operations should normally be secured from the ordinary banking and credit sources.

Inasmuch as the cooperative organization is fundamentally an organization of men rather than capital, the principle of "one man, one vote" has pretty generally been accepted as the sound basis of control of cooperative organization. It is clear that the financial control of the cooperative association should always be in the membership and should never be in the hands of persons not directly interested as producers through the contribution or control of its capital. Such outside control may be used to modify the purposes and functions of the association and might be the means of destroying the association altogether.

Local associations may be, and in many instances have been, amalgamated into a general selling agency, distributing in large volume. These central cooperative agencies ordinarily represent the local cooperative associations rather than the membership and perform only such functions as are necessary to coordinate the selling policies of the various local units. Here again, the general principle must be kept in mind that the local advantages of the local unit should be maintained and the local unit permitted to conduct its own business so far as this can be done consistently with carrying out the sales policy under a coordinated central agency.

The success of cooperation depends in large degree upon restricting the activities of the association to activities in which the members have a mutual financial interest. The inclusion in the activities of the organization of matters outside those of mutual financial concern tends to create dissension and to disrupt the organization upon matters which are not of direct concern to the membership and which are not directly related to their financial interests Consequently, cooperation has been most successful when built around single crops produced in rather limited and concentrated production areas.

The technique of selling operations varies widely in different commodities and it is a difficult matter to secure a management sufficiently skilled and of sufficiently wide experience to make possible the combination under one organization of sales of different commodities. It is quite possible, however, that in the course of development of cooperative organizations, a means may be found whereby the diversified production of farms situated in the diversified farming areas may be combined and sold through a single organization repre-

Digitized by Google

enting the farm unit as a whole rather than the farmer in his capacity of a producer of individual commodities.

The products of the farm are usually sold at the local market in small quantities without adequate sorting, cleaning, or grading. The handling of unsorted, ungraded products for which the seller offers no guaranty of grade, quality, or marketability involves a risk on the part of the middleman and results in the middleman necessarily taking a margin to cover the risk which is larger than would be the case if the commodities were graded, sorted, and cleaned by the farmer, or by an organization controlled by him and responsible for the character and quality of the product.

The risks which are incident to handling ungraded, unsorted, unstandardized agricultural products in distribution and the added expense of distribution which they cause can be greatly reduced by better organization and standardization of agricultural production through soundly organized cooperative associations.

As previously indicated, the success of cooperative associations probably lies more generally in the organization of farm production and standardization of farm products, thus reducing the varieties and grades of farm production to a more standard basis and reducing cost of distribution all along the line. It seems altogether likely that the cooperative association can not succeed as a holding corporation for the purpose of withholding the crops from the market to establish an artificial price. The attempt to accumulate and hold a sufficient proportion of the crop to effect the price involves speculative risk wholly outside of those of the normal business operations, and may result in losses as well as gains and might well result in increasing the price fluctuations from which the farmer now suffers rather than in diminishing them.

The ideal marketing system necessarily contemplates a condition under which the products of the farm flow in even volume in response to existing demand.

It is quite possible through standardization of production through accumulating shipments in volume of known quality and backed by the responsibility of soundly financed cooperative organizations to produce a more even flow of farm products in response to demand, and thus diminish the daily, weekly, and monthly fluctuations of prices of farm products. Indeed, it is in this field that the greatest prospect of advantage and profit to the farmer seems to lie. The success of cooperation can not rest upon the establishment of artificial control of prices. It must rest rather upon the association's ability to perform the necessary service more efficiently and with greater advantage both to the producer and the general public than the service is now performed by existing agencies. The commission is convinced that there is a wide field in which the farmer's cooperative organization can wisely and efficiently function to the mutual advantage of the producer and the consumer. It will function most successfully along those lines which invite improvement in the character and quality of farm products and reform in the distributive processes nearest to the farm by making possible a more standard production in limited production areas and distribution in volume in response to known demands through an organization of accepted financial responsibility.

It is axiomatic that a group of persons may not always combine to do a thing which might be lawful for any one of them to do as an indi-

Digitized by Google

vidual. It seems to follow that a public interest oftentimes attaches to a thing done collectively which does not attach to the same thing done by individuals. There is a power inherent in collective action which does not belong to an individual action and the larger the organization the greater the power. Recognizing this fact the public imposes an obligation upon the collective organization which it does not impose upon the individual. The cooperative organization, therefore, has an obligation to the public as well as a responsibility to its members and the community which it serves.

The farmer is entitled to a fair return for his products through cooperation, but his organization should not only look toward securing a fair return to the membership for its products but also to a reduction of the general costs of distribution to the consumer. While the farmer is entitled to the cost of production plus a profit where the law of supply and demand permits it, he is not privileged through the power of organization to impose a higher price on the consumer than the law of supply and demand justifies. Of course, the farmer must receive over a series of years a price in excess of the cost of production. It is obvious that if such is not the case production will inevitably adjust itself in its relation to demand on a basis which will give the farmer a reasonable return for his crops, but as previously indicated cooperative organization can not exist on a basis of artificially restricted production, arbitrarily controlled supply for purposes of speculation or to make profits not justified by the law of supply and demand, nor should it be permitted through the power of organization to create any situation which is discriminatory or unfair to the public or to its competitors.

The commission believes the economic limitations inherent in agricultural production and cooperative organizations for the sale of such products fully negatives the wrongful use of such power as collective organizations of farmers might possess.

The cooperative association, at least until it is able to definitely demonstrate its ability to establish and operate a more direct, efficient, and less costly scheme of distribution than exists at present, should be organized in such a way as to make possible the coordination of its activities with those of existing distributive agencies. One of the advantages flowing from cooperative organization is the participation which it offers to its members in larger affairs of business and through this participation the education which it affords to the membership in general of distributive processes and the relationship which exists or should exist between the various agencies engaged in these processes. Obviously the agencies engaged in distribution can not be wholly independent of each other; on the contrary, they are closely interwoven and have generally grown out of a vital need in distribution.

The solution of the farmers' distributive problem does not lie directly in legislation, but rather in the creation of economic agencies controlled by him for the sorting, handling, and distributing of his crop. There should, however, be greater uniformity of State laws authorizing the organization of cooperative associations and establishing their powers, duties, and obligations as well as the powers, duties, obligations, and liabilities of their members. The Federal Government has by legislation removed the obstacles to cooperative organization which heretofore existed. Both State and Federal Gov-

Digitized by Google

ernments should enact the necessary legislation to assure cooperative associations against unfair discriminations and to insure such associations against unfair practices.

As previously indicated, the success of such organizations will depend in large measure, first, upon a careful analysis of the problem to be solved; the creation of a sound organization adapted to the peculiar conditions to be met, the development or employment of a management experienced in the business and skilled in its technique, a provision for adequate fixed and working capital, sound credit, and the creation of such relationships with existing or future distributive agencies as will provide for the even flow of farm commodities in response to demand.

The commission believes that the rational development of farmers' cooperative associations will tend to hasten the standardization of agricultural production, improve the distributive processes and reduce their costs, and that the organization of such associations should be encouraged.

70678°—H. Rept. 408, pt. 4, 67-1——16

Digitized by Google

Chapter XI.

MARKETING AND RELATED ACTIVITIES IN THE BUREAU OF AGRICULTURAL ECONOMICS OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.[1]

The development of a study of marketing problems by the Federal Government was begun in the Department of Agriculture because of the close relation between marketing and production. The demands for improvement in the system of marketing farm products came from the producers who desired means of securing a fair price for their products. As the work has progressed it has been found that much of the remedial work falls upon the farmers themselves in the form of adjustment of production to market demands, better grading of product to be shipped, and the proper packing of the product, so that it will arrive upon the market in good condition. The problems of production and marketing are so intimately interwoven that there will be no effort in this brief discussion to separate out the purely marketing functions of the department, but rather to give the marketing work in its setting along with the other economic work of the department.

The rapid development of legislation having to do with marketing and the regulation of marketing agencies, the administration of which has been delegated to the Department of Agriculture, brought about the organization first of an Office of Markets, later expanded into a bureau, then expanded further by consolidation with the statistical and crop-estimating bureau of the department, and more recently, this year, the organization of all of the activities having to do with the economic side of farm production and distribution into what is now designated the "Bureau of Agricultural Economics."

The history of the development of Government work on marketing problems is comparatively short. While there have been sporadic suggestions since the Federal Department of Agriculture was established, looking toward the development of some marketing agency, nothing of importance was done until March, 1913, when authority was given and an appropriation of $50,000 was made in the Agricultural appropriation bill for the study of marketing and distribution of farm products by the Department of Agriculture. The Office of Markets was created in May, 1913, as a separate unit in the department. By 1915 an appropriation for this work had been increased to $200,000 and the enforcement of the cotton futures act was intrusted to this office, bringing an additional appropriation of $150,000. Work in rural organization was provided for with $40,000, making in 1916 a total of $484,050 available for marketing activities. In 1917 Congress passed the grain standards act, the warehouse act, the standard container act, the administration of all being delegated to the Office of Markets and Rural Organization.

[1] Prepared by the Department of Agriculture.

Digitized by Google

With the appropriations included for the enforcement of these new acts, the total appropriation for marketing work was increased to $1,172,590.

The war emergency was the occasion for rapidly expanding market service work and when the Bureau of Markets was established under that name, in June, 1918, the regular appropriation of $1,718,575 was supplemented by $2,522,000 for war emergency work.

In 1921 the consolidation of the Bureau of Crop Estimates and the Bureau of Markets was authorized, thereby providing for a closer correlation of the marketing and production activities. This year, 1922, the Agricultural appropriation bill provided for the consolidation of the Office of Farm Management and Farm Economics with the Bureau of Markets and Crop Estimates, which further consolidated production and marketing work into a common field.

GROWING INTEREST IN ECONOMIC QUESTIONS.

Until the war gave stimulus to popular interest in economic questions, the Department of Agriculture dealt primarily with problems of individual farm management, with particular facts of crop production and with specific market problems. More recently, however, the demand has been for economic information that will enable the farmer to adjust his production program to changed marketing conditions in this country and abroad. Changes in foreign demands, changes in cost of transportation and in charges made for other middleman processes have made it necessary for the farmer to study economic conditions as never before in this generation; if he is to produce and market farm products intelligently.

The development of work in production statistics essential to the adjustment of production to market conditions began with the organization of the United States Department of Agriculture when the work of gathering statistics was inaugurated. Later came a demand for studies of the economic aspects of the individual farm as a basis for efficient farm management, and the organization of the Office of Farm Management resulted. Still later the insistent demand by farmers and the public for a closer study of marketing problems and means of preparing farm products for the market led to the development of the Bureau of Markets. These three phases of the farmer's economic problem were approached from the standpoint of practical results which would be immediately useful to farmers and others, but primarily to farmers. It is the farmer who has the keenest interest in a given consignment of farm products getting into the market. He is interested in efficient handling of his product which will reduce the cost of putting the product upon the market. He is also keenly interested in securing a fair share of the consumer's dollar in return for his productive effort. But since the farmer's future efforts in production are determined by the return he gets, consumers generally are vitally affected by the efficiency and the fairness of the marketing system. Hence, while the marketing of farm products is distinctly an agricultural problem and requires the attention of the agricultural economist, the right solution of these agricultural marketing problems benefit not the farmer only but the whole Nation.

When it became clear to those administering the United States Department of Agriculture that production costs, readjustments in

Digitized by Google

farm organization, the statistics of production, distribution, and consumption bore a vital relation to marketing problems and in turn that marketing conditions were determining factors in guiding production, the movement was made to consolidate the divisions of the department dealing with these economic questions into one bureau in order that these allied questions might be handled more efficiently.

The broader scope of the combined bureaus represented in the new group called for a more comprehensive name and the title, "Bureau of Agricultural Economics" was chosen. It is a broad term which covers all the work formerly done by the several bureaus and is also in line with the growing demand from farmers and those dealing in farm products, for world-wide surveys and studies of all the economic factors influencing prices and the movements of products from producer to consumer.

ORGANIZATION OF THE MARKETING WORK IN THE BUREAU OF AGRICULTURAL ECONOMICS.

For administrative purposes the work of the economic phases of agriculture, production, and distribution are placed in three general groups of divisions: First, those dealing with production; second, those devoted primarily to marketing; and, third, those dealing with general production and distribution statistics and the other related questions of finance, cooperative organization, land problems, and the larger problems involved in population and rural-life studies.

DIVISIONS OF THE BUREAU OF AGRICULTURAL ECONOMICS.

Administrative divisions:

1. Office of chief, associate, and assistants.
2. Information, editorial, and news service.
3. The economics library.

Production divisions:

4. Farm management.
5. Cost of production.
6. Crop and live-stock estimates.

Market divisions:

7. Cotton, including cotton futures act.
8. Grain, including grain standards act.
9. Fruits and vegetables, including standard container act.
10. Hay, feed, and seeds.
11. Dairy and poultry products.
12. Live stock, meats, and wool.
13. Warehousing, including warehouse act.
14. City markets; administration of Washington Center Market.
15. Cost of marketing.

General divisions:

16. Statistical and historical research in production and marketing.
17. Agricultural competition and demand in foreign countries.
18. Agricultural finance, including credit and insurance in production and marketing.
19. Agricultural cooperation in production, buying, and selling.
20. Land economics and land utilization.
21. Farm population and rural life.

CHART OF WORK IN AGRICULTURAL ECONOMICS.

The accompanying chart shows the activities of each division by topics, together with the relation of several of the groups which were formerly separated but which have been combined to secure more effective results on economic problems.

Digitized by Google

MARKET AGRICULTURAL ECONOMICS.

PRODUCTION DIVISIONS. GENERAL DIVISIONS.

4 5 6 18 19 20 21

FARM MANAGEMENT.

Farm Business analysis.
Farm organization.
Choice of farms.
Choice of crops.
Farm labor.
Farm power.
Farm practice.

CROP ESTIMATES.

Estimates of crop production, stocks and disposition.
Estimates of live-stock numbers, sales, and losses.
Farm prices.
Prices farmers pay.
Hours and wages of farm labor.
Farm statistics.

AGRICULTURAL FINANCE.

ortgage credit.
ersonal credit.
arketing credit.
arm taxation.
surance, for production, and marketing.
ural public utilities — telephone, light, power.

LAND ECONOMICS.

Economic classification of land.
Land reclamation and utilization.
Settlement.
Values.
Ownership.
Methods of renting land.

COST OF PRODUCTION.

Crop costs.
Live-stock costs.
Costs and management.
Costs and prices.
Cost methods.

MPETI- MAND.

Admi
ton
Cotton
Cotton
Classi
Demos
class
Handl
hous
Marke

re-
produc-
market-

re-
ting

oreign
and

pes.

AGRICULTURAL COOPERATION.

Forms of cooperation.
Purposes.
Legal problems.
Methods and practices.
Methods in various countries.
Historical study of cooperation.

FARM POPULATION AND RURAL LIFE.

Analysis of farm population.
Population movements.
Farm standards of living.
Rural social institutions.
Farm tenures—influences on community life.

70678°—22. (To face page 234.)

Digitized by Google

Digitized by Google

FARM MANAGEMENT.

The work in farm management is concerned first of all with efficient and adequate production of crops, live stock, and live-stock products. Research in this field, therefore, is directed toward discovering and making available facts which can be utilized in organizing and conducting the farm business for the purpose of securing the greatest continuous profits and satisfaction to the farmer and his family.

The farmer as a producer has to perform at least two important functions—first, that of choosing profitable lines of production in which he may employ the land, labor, and capital over which he has control; and second, that of supplying effective management, which refers to the association and proper apportionment of the factors (land, labor, and capital) of production. To the end that the farmer may act intelligently, this work endeavors to discover and make available facts which will assist the individual farmer with a given piece of land and a given amount of equipment and labor in determining for any given year such things as: (1) What crops and how many acres of each should be planted; (2) what kind of live stock and how many of each should be kept; (3) how much power and labor should be employed; (4) how much capital will be needed for live stock, equipment, operating expenses, etc.; (5) what yield of crops should be obtained and to what extent different methods and practices will aid in securing a given volume of production at lowest cost.

The workers in farm management have gathered a large body of statistics relating to farm organization covering practically every type of farming and every section of the United States. In many instances the records obtained cover the same areas and the same farms for a series of years. Such data make it possible to test the effects of changes in farm organization on profits; to measure the reaction of farm organization in the various regions to changes in the industrial conditions; to measure the effect of foreign competition on farm organization, and aid in securing a sound basis for the development and establishment of credit facilities.

There have been obtained in the United States approximately 52,000 farm records. The number of records by geographic divisions is as follows:

New England	4,560
Middle Atlantic	10,073
East North Central	9,327
West North Central	9,635
South Atlantic	7,252
East South Central	1,919
West South Central	1,571
Mountain	5,247
Pacific	2,613
United States	52,197

Approximately 11,000 of these records were taken by the Federal farm-management workers directly, 15,000 in cooperation with the the State colleges and experiment stations, and 26,000 by State college and experiment station and farm-management demonstrators. About 35,000 of these records were taken from 1908 to 1915, 16,000 from 1916 to 1920, and 1,000 in 1921.

Digitized by Google

The statistics on farm organization may be used for other purposes than aiding directly in organizing the individual farm for adequate and efficient production. It is often desirable to have information on conditions in agriculture for the purpose of constructing a rational agricultural policy and enacting beneficial legislation, or to compare the agricultural conditions with conditions in other industries. The data procured by the section of farm organization may be utilized for these and other purposes.

In this connection it is well to point out that while a considerable body of statistics has been secured, it is evident that they are not adequate to meet all the demands made by farmers and others interested in agricultural problems. The farmers of the country are realizing the importance of employing better business methods. For this reason the demand for information on the problems of organization is increasing rapidly. The work in farm organization and practice must be continued and expanded in order that information may be available on the changes which are taking place in farm organization and practice due to changes in demands for labor by other industries, foreign competition, and the opening and development of new regions. The work of this section, therefore, will be extended as rapidly as possible to cover in a more adequate and thorough way all sections of the country.

COST OF PRODUCTION.

The cost of production division has been making exhaustive studies of the cost of producing farm products. These data have been gathered by three distinct methods:

1. *Complete cost method.*—This consists of keeping detailed farm records on all crops, live stock, and live-stock products on a given number of individual farms, these farms representing certain types of farming in a given area.

2. *Enterprise cost method.*—By this method careful records are secured on some specific crop, live stock, or live-stock products, accompanied by a general survey of the whole farm business. The data are secured each week through personal visits to the farm by a representative of the department.

3. *Farm survey cost method.*—In gathering data by this method, the farmer is personally visited by a trained enumerator, who fills out a carefully prepared questionnaire from which may be computed the cost of producing a specific crop, live stock, or live-stock product, and the net income from the farm.

Since the work was started in 1913, a considerable body of data on costs has been gathered. This work may be briefly summarized as follows:

	Years of study.	Total records.		Years of study.	Total records.
Cotton	1914-1922	2,899	Hay	1923-1927	411
Wheat	1914-1922	2,316	Sugar beets	1914-1919	1,477
Corn	1914-1922	1,279	Rice	1920-1922	451
Silage	1915-1922	431	Miscellaneous crops	1918-1922	208
Potatoes	1913-1919	1,497	Milk	1919-1922	993
Tobacco	1919-1922	555	Cattle	1918-1922	2,048
Apples	1921-1922	1,167	Hogs	1921-1922	348

Digitized by Google

In addition to these, 1,438 complete farm cost of production records have been obtained covering every section of the United States.

It is expected to continue and expand work in cost of production so as to secure information on all important crops, live stock, and live-stock products in the United States and to determine the variations in these costs on individual farms and for various regions of the United States. The cost of beef production and swine will be expanded, and the cost of growing mutton and wool will be inaugurated. Data relative to the cost of growing various classes of fruits and vegetables have been started and will be expanded. In short, it is proposed to secure cost data on all important farm enterprises.

CROP AND LIVE STOCK ESTIMATES.

The purpose of this work is to gather and place before the people—producers, dealers, consumers, and commercial men in other lines of industry—an accurate picture of food and agricultural supplies, potential and actual, together with location in respect to market and consumption, and to make available information concerning prices received by farmers for their products.

The decennial census is used as the primary basis for estimating acreage and numbers of live stock. The organization for gathering the information consists of the following: (1) A crop reporting board, consisting of the head of the division and five to eight other members, part of whom are agricultural statisticians drawn from the field force. It meets once a month, considers the reports from the various sources, and determines the final figures for the United States. The work is done behind locked doors so that no one may have an opportunity to obtain any data in advance of the official time of publication. (2) A tabulating and computing section in Washington, consisting of a large force of computing and tabulating clerks, in charge of statisticians. (3) A corps of agricultural statisticians, one for each important State, with clerical assistants. Each of these statisticians makes personal field studies and maintains a large corps of correspondents, mostly farmers and dealers, from whom they secure monthly reports. Based on these reports and personal field work they make up periodical reports for Washington. (4) County reporters, one in each agricultural county in the country, reporting for his county each month directly to Washington. (5) Township crop reporters, mostly farmers, one for each agricultural township in the United States, who also report directly to Washington. These number in all about 35,000. (6) In addition to the regular correspondents special lists of growers, buyers, and dealers are maintained to whom special questionnaires are sent. The total number of the various classes of reporters exceeds 200,000.

The returns from the township and county reporters are used as a check upon the reports sent in by the agricultural statisticians, so that the crop reporting board in Washington has three distinct sources of information upon which to base its estimates. All available checks, such as railroad movements and receipts, assessors' reports, etc., are used in order to insure the greatest possible accuracy in the reports.

Digitized by Google

Resulting reports are as follows:

Actual and relative supply of certain farm crops are shown by the regular and special reports of stocks on farms and carry-over from one season to the other. These reports relate especially to cereals, potatoes, and numbers of live stock. The regular crop reports indicate prospective supply by forecasting production before harvest and estimating agricultural production after harvest. These reports relate to all staple and many special crops. For a number of crops the reports show the marketable surplus production, which is the actual supply to be marketed as nearly as can be estimated.

The crop reports show the merchantable quality of cereals, some varieties of fruits and vegetables, length of cotton staple and condition or average weight of certain classes of live stock, especially swine. They also show production and stocks by States and for some special crops by principal areas of surplus production. The reports prepared by the agricultural statisticians in the States show production by counties.

The percentage of total production marketed by months in each State and for the United States is shown also the disposition or utilization of various crops, that is, quantities used for seed and for food and feed.

The crop reports show the prices received by farmers for different crops in each State and for the United States monthly. Factors affecting production, supply, and market movement are noted. The crop reporting service also supplies timely information with respect to progress of planting and other farm work, condition of roads, growing condition of crops, condition of live-stock supply of feed, and condition of ranges and pastures, value of farm lands, relative supply and wages of farm labor, price farmers pay for machinery, equipment, and supplies, and incidentally information as to the intention of farmers to increase or decrease production of particular crops in certain areas.

COTTON MARKETING.

Work on cotton marketing begins with the preliminary preparation for marketing, and includes standardization investigations, preparation and distribution of type sets of standards, enforcement of the United States cotton futures act, and resulting studies of spot and future cotton markets, cotton-testing experiments, and the conduct of the cotton-quotation news service.

Cotton-handling investigations include studies of the amount and cause of weather damage to cotton and the best methods of avoiding such damage; the best methods of compressing cotton; the proper covering of cotton so as to protect bales; the elimination of unnecessary tare; and other questions relating to the economical handling of cotton, with special reference to preserving the spinning value of the cotton.

The work is done in cooperation with warehousemen and others in the field. The work is conducted largely in Texas and North Carolina. During the coming year this work may be conducted in South Carolina or Georgia.

Digitized by Google

STUDIES OF WEATHER DAMAGE.

It has been estimated that from $25,000,000 to $50,000,000 is annually lost on account of the fact that baled cotton is not properly protected. This loss is forcibly illustrated by the figures obtained by this bureau from a series of tests. In one test seven bales of cotton were exposed to the weather for six months. One of the bales was laid flat on the ground for the entire period except when it was being weighed each week. The weight of this bale at the beginning of the test was 492 pounds. At the end of the test the damaged cotton was removed and the bale put in merchantable condition. It was found that the loss by damage alone was 262 pounds, which, figured at 20 cents per pound, would amount to $52.40. Another bale in the test placed in a more favorable position, on end, lost 120 pounds, and still another bale placed on edge lost 71 pounds. Other experiments along this line are being made at the present time.

COTTON DEMONSTRATION WORK.

Cotton marketing demonstrations are made in the field to demonstrate to growers of cotton the advantages to be gained by (*a*) classing cotton before sale and possessing accurate knowledge as to the current market prices for cotton of various grades and lengths of staple; (*b*) marketing on a basis of true value and not on a basis of averages; (*c*) organizing on a community basis for growing cotton of a single superior variety from pure seed and for marketing the cotton grown in such communities in commercial lots even-running as to grade and staple; (*d*) using warehouses for protecting cotton and as a business adjunct to orderly marketing.

To demonstrate to the trade (*a*) that more discrimination in purchases will encourage the production of the better types of cotton; (*b*) that the universal use of the United States standards for cotton will facilitate cotton marketing, are the objects of other demonstrations. Assistance is given to communities of cotton producers organized for the purpose of demonstrating the advantages of the cooperative production, handling and systematic marketing of cotton. Competent men are employed to class the cotton grown in these communities and to explain and demonstrate the factors on which the intrinsic value of cotton is based so that the producers may appreciate them and be able to improve their product. Constant touch is maintained with all sources of market information so as to advise the producer of the approximate value of his cotton whenever he desires to sell. Demonstrations are made of the depressing effect of inferior varieties upon prices and the losses incident to improper harvesting, ginning, baling, and storage are pointed out. The superior character of the cotton produced from pure stocks of seed is demonstrated. Every effort is made to put the producer of cotton in a more equitable position in the market and to teach him how to improve his crop and to market it systematically. In connection with and as a basis for these demonstrations, investigations are made of the marketing methods obtaining in the primary markets and the spread in prices occurring between the producer and the consuming mills, and other related questions.

Digitized by Google

The States Relations Service, State extension services, and local community organizations assist in this work.

Wherever these demonstrations are made cotton is being sold more generally according to its true value, rather than on averages. Records of actual sales of 75,000 bales show a return to the producer who knows the grade of his cotton before sale of from $5 to $30 per bale over that received by producers who sell without such knowledge.

A marked increase in the production of superior cotton has resulted from work in cooperation with the Bureau of Plant Industry. In Texas alone it is estimated that over 300,000 bushels of seed of superior varieties of cotton have been planted, producing cotton which has been sold at a premium estimated at more than $1,500,000.

As a result of previous demonstrations many communities of cotton growers have organized and are continuing to employ cotton classers to acquaint all producers in their communities of the grade and value of their product and to interpret the market conditions. Several of these communities also are employing marketing agents.

Ten bulletins have made the results of this work available to all.

COTTON STANDARDIZATION.

Research field and laboratory studies are conducted to determine the practicability of adopting standards for the various qualities of cotton not standardized and their applicability and usefulness upon promulgation.

Studies are made regarding the adaptability to trade conditions of the standards promulgated by the Secretary of Agriculture. Methods are being considered for determining the tensile strength of the cotton fiber and for the examination of the fiber under the microscope. A further study will be made of the various grades, qualities, and conditions of cotton, with the object of establishing standards for cotton of perished staple, immature staple, and for gin-cut and reginned cotton. The physical effects of the various processes of ginning, baling, and compressing on the grade and fiber of cotton are being investigated.

The States Relations Service, cotton gins and growers, interior buyers, cotton brokers, factors, compresses, cotton mills, and agricultural colleges cooperate in this work.

As a result of investigations regarding tentative standards for grade for American-Egyptian cotton, standards for grade for sea-island cotton, and standards for length of staple the following standards were promulgated, effective October 25, 1918:

Standards for grade for American-Egyptian cotton.

Standards for grade for American sea-island cotton.

Standards for length of staple.

The advent of the boll weevil into the sea-island districts of the Cotton Belt has necessitated the development of an early-maturing variety of cotton. In connection with the work of the Bureau of Plant Industry on the replacement value of Meade cotton, comparative spinning tests on Meade and sea-island cottons have been made and a bulletin has been issued containing the results of these tests. Individual fiber-strength tests have been conducted on cotton grown in different countries.

Digitized by Google

UNITED STATES COTTON FUTURES ACT.

Enforcement of the United States cotton futures act necessitates the supervision of the inspection and sampling of cotton intended for delivery on future contracts and the classification of such cotton prior to its tender and delivery on future contracts made subject to section 5 of the United States cotton futures act, as amended on March 4, 1919.

Cotton intended for delivery on such future contracts must first come within the jurisdiction of the cotton exchange on which the future contract was made. Exchange employees inspect, sample, and weigh all such cotton, and their work is under the general supervision of the Government supervisor and must be performed by the exchange employees to his satisfaction. Each sample of cotton thus secured is split in half, and the two halves are known as original and duplicate samples. This work is also done by exchange employees under a Government supervisor. Both sets of samples are then delivered to the board of cotton examiners.

The board carefully classifies each bale of the original set of samples and issues a certificate which shows the true classification of the cotton according to the United States official cotton standards.

The inspection, sampling, and weighing of cotton for delivery on a future contract made on an exchange which does not require that the cotton shall be delivered at New York or New Orleans are done at the expense of the party who owns the cotton or has control of it, but this work is done under the supervision of a Government supervisor designated for the purpose by the Chief of the Bureau of Agricultural Economics. Those requesting such service are required to pay all costs prescribed by the regulations and also such traveling expenses as may be necessary to perform the service requested.

Anyone who has cotton the tenderability of which on a section 5 future contract he wishes to determine may submit samples of it to a board of cotton examiners and obtain a preliminary informal classification of the samples. Fees for all services are charged and collected in accordance with the regulations relating thereto. All fees collected by this project constitute a revolving fund which is established by law for the maintenance of the work on the basis that the fee shall cover the cost of the service rendered.

A close cooperation exists between the leaders of this project and the respective cotton exchanges where the work is being done.

Up to May 24, 1922, 636,704 bales of cotton have been classified by the boards of cotton examiners. The costs of this service have been paid by the persons for whom services have been rendered.

STUDIES OF FUTURE AND SPOT MARKETS.

Future markets for cotton are studied to ascertain how accurately their future quotations reflect spot values, and to secure general information as to conditions within the future exchanges. Spot markets are studied to determine their fitness for designation as bona fide spot markets; to secure daily reliable quotations for the various grades of cotton from each designated spot market; to inspect the designated bona fide markets from time to time; to secure from 10 of the larger spot markets accurate quotations of the prices of spot

Digitized by Google

cotton of the various grades, (*a*) in order that cotton of grades other than middling delivered on future contracts made subject to section 5 of the United States cotton futures act may be settled for at proper commercial differences in value, and (*b*) in order that producers, merchants, and others interested in spot cotton may have accurate information as to the prices of the various grades of cotton which they have for sale.

COTTON TESTING.

Laboratory and commercial tests are made to ascertain the waste, tensile strength, and bleaching qualities of the different grades, classes, and varieties of cotton, to determine their commercial and spinning value.

The most important results have been published in bulletins. Other results have been published in textile trade journals. They include such subjects as spinning tests of upland long-staple cotton; comparative spinning tests of the different grades of Arizona-Egyptian with sea-island and Sakellaridis-Egyptian cottons; manufacturing tests of cotton fumigated with hydrocyanic-acid gas; manufacturing tests of the official cotton standards of the United States for white cotton; manufacturing and laboratory tests to produce an improved cotton airplane fabric; comparative spinning tests of Meade and sea island cottons; and preliminary manufacturing tests of the official cotton standards of the United States for color for upland tinged and stained cotton.

Spinning tests have also been completed as follows: Comparative spinning tests of Acala, Lone Star, Rowden, Kekchi, Durango 18 and Durango commercial grown at Bard, Calif. (crop of 1919); comparative spinning tests of Pima and Sakellaridis cotton grown near Bakersfield, Calif.; comparative spinning tests of Acala, Lone Star, and Durango No. 18, grown at Bard, Calif. (crop of 1920); spinning tests were conducted on reginned cotton from three different firms.

Spinning tests are now being conducted on Cleveland Big Boll, Webber 49, Delta, and Rowden cotton to determine the effect of compressing cotton to different densities. The results of these tests are being prepared for publication.

Another test is being conducted to determine the effect of a fireproof solution upon the spinning value of the cotton.

Spinning tests planned for the fiscal year of 1923 are: (1) Variety tests of popular varieties of cotton; (2) comparison of volunteer Pima with planted Pima; (3) country damage cotton. Baled cotton stored under cover, compared with cotton left exposed to different conditions.

COTTON QUOTATION NEWS SERVICE.

To assure the making of complete and accurate quotations and general publication of them and to accomplish the purpose of Congress in its report on the amendment to the United States cotton futures act, a price quotation service on cotton has been established. The cotton belt has been divided into five districts, with headquarters established at Charlotte, N. C.; Atlanta, Ga.; Memphis, Tenn.; New Orleans, La.; and Dallas, Tex. Reports of purchases and sales of cotton are gathered by the representatives of the bureau located in

Digitized by Google

these cities and on the basis of these reports weekly bulletins showing the prices at which the various grades of cotton have actually been bought and sold are issued. The information contained in the bulletins is telephoned or telegraphed to persons who request such service, provided they will pay the transmission expenses involved.

New York and New Orleans future exchanges, spot cotton exchanges in designated markets, and cotton interests in the various cotton markets cooperate in this work.

GRAIN MARKETING WORK.

Grain marketing work comprises investigations of problems incident to preparation and marketing, both in the field and in the laboratory; milling and baking tests of different classes, varieties and conditions of wheat; and the enforcement of the United States grain standards act with the investigations, scientific and legal work connected with this enforcement.

GRAIN INVESTIGATIONS.

Investigations relating to preparation and handling include the study of bulk handling. Most of this work has so far been done in the Pacific Northwest where rapid progress is being made in changing over from the bag to the bulk method of handling grain. The California producers and officials have been insistent that this work be extended to California where bulk handling is now being taken up. Lack of funds has made it impossible to meet the California requests as yet, but that section should be given assistance in the future.

In the grain-cleaning work new devices are being developed for cleaning grain at the threshing machine such as a disk recleaner, aspirator, and fanning mill type. These new devices for cleaning grain at the thresher are giving promise of being successful. The devices will be tried out both in the Central and Pacific Northwest this year. Preliminary work with these devices has developed a great demand for cleaning grain at time of threshing.

Grain-cleaning work is conducted to determine the foreign material found in seed wheat; the foreign material threshed, marketed, and shipped to the market; the foreign material (dockage) assessed by inspectors; how to clean wheat on the farm and how to clean wheat at the country elevator.

Educational campaigns with demonstrations follow the determination of the results.

Investigations are being conducted in field and laboratory with a view to preparing official standards for grain sorghums, rye, barley, flax, rough rice, brown rice, and milled rice (revised).

MILLING AND BAKING TESTS.

Milling and baking tests have as their object to secure data relative to the milling and baking value of the different classes, varieties, and conditions of wheat, rye, and other grains, and to determine the relation to milling and baking quality of various factors and treatments to which grain is subjected in commercial handling, storing, and milling. These tests supply information that will aid in perfect-

Digitized by Google

ing the wheat standards and in establishing standards for rye, barley, and grain sorghums, and will serve as a basis for the correct interpretation of existing standards.

These tests include the development of a chemical test to determine rapidly the baking quality of various classes and grades of wheat; a study of heat-damaged wheat, its significance, and methods for its detection; studies of frosted wheat correlating chemical contents with milling and baking tests; investigations correlating the gasoline color value of different varieties of durum wheat, with the latter's macaroni-making possibilities; investigations leading to the accumulation of data for the formulation of flaxseed standards; the development of grain-grading apparatus, methods, tests, and technique for ascertaining the condition and quality of grain and routine laboratory work for projects, offices, and bureaus, all relating to grain grading.

UNITED STATES GRAIN STANDARDS ACT.

The investigational and regulatory activities involved in the enforcement of the United States grain standards act and the rules and regulations of the Secretary of Agriculture thereunder constitute what is known as Federal grain supervision.

Appeals and inspection procedure under the act has as its object to hear and determine appeals and disputes from the grading of grain which may be referred to the Secretary of Agriculture under the United States grain standards act, in accordance with the rules and regulations promulgated thereunder, and to prepare the findings in each case; to review analyses and separations of samples submitted in connection with appeals and disputes and in connection with the supervision work performed under the act; to prepare and distribute type samples of grain illustrating the application of the official grain standards; to standardize laboratory methods and procedure employed in the handling of appeals and disputes; to prepare outlines of procedure and instructions relating to the sampling, testing, and analyzing of grain under the act; to standardize, adjust, and calibrate grain-testing apparatus in use in the offices of Federal grain supervision of the Bureau of Agricultural Economics grain-inspection departments, and grain-testing laboratories; and to develop improved laboratory methods and devise improved grain-testing apparatus and equipment.

Much assistance has been rendered to members of the grain trade and to grain inspectors with regard to the proper methods and procedure to be followed in sampling, testing, and analyzing grain. Laboratory procedure has been standardized and detailed instructions regarding the handling of appeal and dispute samples and samples of grain secured in the supervision work prepared and distributed. Tables of equivalents for use in making analyses have been prepared and distributed. New and improved laboratory equipment has been developed, including apparatus for determining the test weight per bushel on different grains, grain probes used in sampling work, remodeled dockage machines, newly designed laboratory tables for analytical and review work, and grain-sampling device for obtaining a representative portion of a sample of grain for testing and analysis. Type samples of wheat and corn showing

Digitized by Google

classes and subclasses, damaged kernels, heat-damaged kernels, etc., have been prepared. All analysis separations of grain samples made in the field offices have been reviewed at the Washington office by the board of final review. Uniformity in the laboratory work in the field has increased the efficiency of the work of the licensed inspectors, who are constantly under the supervision of grain supervisors in the district in which such inspectors are located.

The records of such appeals or disputes are forwarded to the Washington office, together with advance deposits. Advance deposits are transmitted by the Washington office to the disbursing clerk of the department, the records of the appeals and disputes are carefully checked, and review is made of the analysis separations of the samples of grain involved.

In the case of appeals and disputes, formal findings of the Secretary of Agriculture are prepared and copies sent to the parties, together with any refund that may be due. Refunds of the entire deposit are made in cases where the appeals are sustained. The costs not refunded are covered into the Treasury of the United States. During the fiscal year 1921, 11,617 appeals from the grade assigned by the licensed inspectors were filed with the department, of which 4,890 were sustained. Of the fees deposited for appeals and disputes $26,536.21 was retained and covered into the Treasury as miscellaneous receipts. The demand for this service has more than doubled during the current year. Up to April 28, 1922, approximately 22,000 appeals had been handled, and there is every indication that the demand for this service will continue to increase.

The analyses separations in samples of grain involved in appeals and disputes and in supervision work are forwarded to the Washington office, reviewed by the board of final review, and form the basis of the findings of the Secretary of Agriculture.

Applicants for licenses to inspect and grade grain are examined by methods which have been fixed upon in cooperation with the Civil Service Commission, and qualified persons are licensed to inspect and grade grain for shipment or delivery for shipment in interstate or foreign commerce and to certificate the grade thereof.

Hearings are held upon charges of incompetency, and licenses of inspectors are suspended or revoked, when necessary, for knowingly or carelessly grading grain improperly or by other than the United States standards; for the issuance of false certificates; for the acceptance of money or other considerations; for the neglect or improper performance of duty; or for violations of the act or the rules and regulations thereunder by persons other than licensed inspectors.

As a result of the enforcement of the grain standards act and work in connection with it, marked improvement has been effected in methods of marketing, in standardization, and in quality of grain offered for market. Business ethics in grain marketing are improved, and the marketing of grain is facilitated by standardization and inspection. Federal grain certificates make excellent paper for collateral, and this improves the agricultural credit situation.

FRUIT AND VEGETABLE MARKETING.

The work of the fruit and vegetable division includes research work on fundamental conditions and problems of the industry; standard-

Digitized by Google

ization studies relating to these perishables and their containers; enforcement of the United States standard container act; market inspection of perishables and the conduct of an extensive market news service. Aside from the study and promotion of grading and standardization described later, the fruit and vegetable division has at present four major lines of research work which have a direct bearing on the farmers' problems.

A mass of information is being accumulated on the consumption of the major fruits and vegetables in our principal cities, which will show purchasing and consuming power of cities as rapidly as analyzed.

Information regarding financing of production of fruit and truck crops in the principal commercial areas is secured chiefly by the field men engaged on market news work. The result should show the relative extent to which growers are able to finance themselves, the extent to which the production is financed by local banks, and the extent to which production is stimulated, financed, or controlled by outside commercial agencies. The result should give some idea as to what proportion of the crop of a given locality is free to move to market through channels freely selected by the producer at the time of harvest and to what extent marketing is controlled by advances and crop contracts.

Studies of auction methods of sale are carried out by conducting detailed personal studies on the ground. A competent investigator is now giving his whole time to this work, securing records planned to be complete enough to enable the bureau to make a satisfactory statistical presentation and analysis of the business of auction companies. The results should show the strength and weakness of the auction as a wholesale agency, the types of auction company organizations which do and which do not inspire the confidence of either the shippers or the buyers, and the probable place of the auction in the marketing scheme of the future.

STANDARDIZATION OF PERISHABLES.

At the present time the work of standardizing fruits and vegetables is of two general kinds. First, the securing of data on which to base grades for products not yet standardized; and, second, execution of a program for securing the actual use of the standards which have been recommended. The latter phase of the work involves close cooperation with the various educational, extension, and regulatory agencies of the various States.

Grades have been worked out, tested under commercial conditions, and recommended for: Barreled apples, asparagus, cauliflower, celery, cabbage, cucumbers, lettuce, peaches, white Spanish peanuts, white potatoes, sweet potatoes, northern grown onions, Bermuda onions, strawberries, and tomatoes.

Standardization in general facilities contracts for future delivery, sales at long range by telegraph or otherwise, the inspection of the various products at shipping point and in the receiving markets, the cooperative pooling of the products of various growers, financing through advances on storage and warehouse receipts, and the intelligent comparison of market prices. In other words, it provides the yardstick with which to determine the relative market value of the product at each successive step in the process of distribution.

Digitized by Google

STANDARDIZATION OF CONTAINERS.

Fruit and vegetable containers are tested; Government agents visit factories, markets, and producing sections to determine the kind of packages in use and to collect samples. Recommendations for further legislation are worked out at the request of legislators. Results of the studies were embodied in the United States standard container act of 1916 and in the Vestal bill now pending.

UNITED STATES STANDARD CONTAINER ACT.

The object of this legislation, as stated in the act itself, is "to fix standards for climax baskets for grapes and other fruits and vegetables, and to fix standards for baskets and other containers for small fruit, berries, and vegetables, and for other purposes."

Those affected by the United States standard container act are informed of its purposes and provisions by means of letters, bulletins, and articles in newspapers and magazines. Enforcement of this law has always been largely educational in nature. The law tends to prevent fraud; to establish confidence and good will; to lessen cost of marketing.

MARKET INSPECTION.

The bureau makes actual inspections of shipments of fruits and vegetables, usually while still in the car, for the purpose of certifying to financially interested parties quality and condition at time of inspection.

Prompt settling of differences and disputes is accomplished which prevents deterioration of highly perishable products while the interested parties are trying to reach an agreement, and releases cars which are frequently held up several days on account of such disagreements.

Inspection prevents in large measure unfair practices on the part of unscrupulous shippers and receivers simply by being on the ground and subject to call by any financially interested party.

Amendments to the inspection item of the appropriation bill for the coming fiscal year authorize inspection of products "when offered for interstate shipment"; remove restrictions which limit services to "interstate commerce" shipments; and provide for inspections in all markets which can be "conveniently reached" from a designated market. While the authority for food products inspection has thus been greatly expanded, no additional appropriation was made for carrying out this work, and practically nothing can be done in shipping point inspection work except in such States as have organized inspection services.

During the first 10 months of the current fiscal year 24,986 inspections were made of fruits and vegetables and approximately $101,000 collected as fees and returned to the Treasury as miscellaneous receipts.

There is insistent demand for the Federal food products inspection service from practically all fruit and vegetable producing sections of the United States. It is believed that this work can be accomplished without any great expense to the Federal Government, by a provision

Digitized by Google

for the use of fees collected for the expansion of the service or by an adequate appropriation to conduct this work in case fees must be returned to the miscellaneous receipts of the United States Treasury.

FRUITS AND VEGETABLES MARKET NEWS SERVICE.

Market prices and conditions, together with receipts of car lots, of fruits and vegetables are secured by bureau representatives in 12 of the large consuming and distributing markets in the United States, which information is wired to Washington for distribution to various points in the country by telegraph and by mail, as well as published in local bulletins at points where compiled.

Reports giving market prices, conditions, and other facts pertinent to local conditions are secured in districts of large production by traveling representatives, which information is likewise wired to Washington and distributed from there to market stations and other competing producing sections both by telegraph and mail. It is estimated that mimeographed reports reach about 100,000 growers, shippers, dealers, carriers, etc., vitally interested in the growing and marketing of fruits and vegetables. In this work the actual growers on the farms are reached with more certainty than in most lines of endeavor. The service is now used and highly valued by thousands of growers, shippers, buyers, and dealers in all parts of the country.

The market reports containing the information outlined in general above are of great assistance to growers in keeping them fully advised with respect to the prices for which their commodities are being sold both f. o. b. and in terminal markets. They enable them to judge as to whether or not they are getting full value for their crop, thus placing them in a position to realize the greatest profit for their labor which conditions justify. They show them the quality and condition of their crop both at shipping point and when it arrives in the central markets and enable them to make such corrections as they may wish or as are justified in their manner of packing and grading to insure the arrival of their produce in the best possible condition. They place before them information which is of great assistance as a means of deciding the acreage to be grown another year based upon last year's experience.

These reports when placed on file and retained for a series of years become very valuable as statistical matter in planning yearly operations. They show the competition to be expected from other producing sections and the rise or fall in production at other points.

The daily market reports contain information of great value to shippers both with respect to movement of car lots and prices. Only by the record of number of cars moving to market and by careful study of car-lot arrivals can a shipper expect to keep fully advised regarding the condition of the market or markets in which he is interested and thus avoid gluts with resultant demoralized prices. They can change the routing or divert their cars to other points as occasion demands. They are placed in a position to judge about what their shipment should sell for on arrival, thus enabling them to work on a closer margin with a resulting benefit both to themselves and the grower in better prices realized.

The daily market reports contain vital information to the dealers in that they show them the probable supply to be expected on their

Digitized by Google

markets each day and the actual prices realized by the trade not only in their market but in other large competing markets for the same period. They keep them fully advised regarding market conditions in the principal producing sections from which their supplies are derived, the conditions of the crop during growing period, as well as weather conditions which may affect the shipments.

The carriers from whom the report of cars shipped and arrived is received also find the market reports of inestimable value for statistical purposes and for presentation in court for suits in loss and damage cases; also for their development and agricultural agents in furthering the agricultural territory or improving the conditions in the territory now under cultivation for the specific crops best suited.

The market reports are valuable to educational institutions where classes in marketing are conducted for the purpose of giving students an insight into the marketing problem on fruits and vegetables, and thus equipping them for a more successful and active business life.

While various other factors in the marketing of fruits and vegetables receive both a direct and indirect benefit from the market reports, the real benefit is derived by and goes back to the grower in practically all cases either by means of better methods and better facilities or better training for the future.

The service prevents dishonest practices of a few middlemen, such as rendering an account sales of less than the market prices prevailing at the time and prevents buyers at the shipping point from beating down prices by telling various untruths regarding market conditions.

It puts the producer on an equal bargaining basis with the middlemen by giving him a knowledge of market conditions. This enables him to sell his product for a fair return. It prevents duplication of telegraphic expense. Without a national distribution of market information, each agency desiring information must telegraph to every city from which it needs prices and conditions. The cost of this tremendous duplication of telegrams must be borne eventually by either the producer or the consumer. The national news service makes a part of these telegrams unnecessary.

It secures information regarding destinations, diversions, and other transportation information that no private agency could secure. If a private agency could profitably develop an organization sufficient to compile this information, it would not be desirable to allow such a private organization complete access to the railway records of the shippers.

It causes distribution to the best-paying markets. Without a dependable news service middlemen would tend to ship produce to the point where they would receive the highest commission (for example, headquarters of the firm), rather than the market which would yield the producer the most. It furnishes a more impartial, accurate, and complete report than any private agency could expect to do. Any private agency would always be open to suspicion and the danger of bias, whereas the Government may be, and is, absolutely impartial.

Digitized by Google

MARKETING HAY, FEED, AND SEED.

The work of the hay, feed, and seed division is divided into three main projects. These are market news service, market investigations and hay standardization investigations.

MARKET NEWS SERVICE ON HAY, FEED, AND SEED.

The object of this service is to collect and distribute, through the weekly publication Weather, Crops, and Markets, marketgrams, radiograms, and through special telegraphic and mimeographed reports timely information relative to supply, demand, movement, prices, quality, or condition, etc., of hay, feed, seed, and broom corn at important consuming and distributing markets. This information is obtained from paid and voluntary correspondents at practically all of the important markets and from growers and local shippers in producing sections. Personal visits are made by men from Washington and branch offices at Chicago and Fort Worth, Tex., to check up information received from regular correspondents and from form and individual letters.

Before the bureau entered the market news service field on these commodities there were a number of daily, weekly, or monthly publications that gave some information regarding hay, feed, and seed, but only a few were designed for the producer's needs and practically all could be criticized in one or more respects, as follows: (*a*) Special articles too long and from the middleman's viewpoint usually; (*b*) too many scattered, unrelated, and frequently conflicting reports that are more confusing than clarifying to the farmer; (*c*) information not timely enough; (*d*) cover too many subjects or else fail to cover the most important kinds of hay, feed, seed; and (*e*) biased character of reports. More accurate and unbiased reports are readily available and marketing conditions have cleared up in that matter.

MARKET INVESTIGATIONS.

The purpose of this project is to investigate the marketing of these commodities in producing and consuming sections. Factors influencing or affecting the quality, supply, demand, movement, and prices of these agricultural products are studied in order to suggest possible improvements and economies in the marketing of them. Actual first-hand field studies are made of methods of preparing, selling, weighing, shipping, and warehousing of hay and feed. Other investigations include a study of inspection, grading, and reconsignment of hay at terminal markets, market preferences for hay, requirements of the various feedstuff laws regarding packing, sacking, marking, etc., State and Federal seed legislation, and marketing methods of seed growers and dealers. Information relative to the location of principal markets or consuming territories for various kinds of hay is obtained. General feed trade rules and regulations adopted by various organizations, such as corn millers' association, cotton crushers' association, etc., are studied, as is commercial seed nomenclature. Studies relative to seed quality or grade are also conducted, and the practicability of establishing a seed certification and registra-

Digitized by Google

tion service for the purpose of better handling and marketing is being investigated. A series of five bulletins has been issued describing methods of marketing hay from country shipping point through the terminal markets with recommendation for improvement.

HAY STANDARDIZATION STUDIES.

Hay standardization studies have as their object the formulation of Federal hay grades based on scientific principles, and yet of practical application to supersede existing sets of grades that are more or less of haphazard origin and are interpreted differently in almost every market. Color, mixture, texture, and other characteristics of hay obtained in all sections of the country are being studied in the laboratory—the only one of its kind, so far as is known, in this country—and complete records are being made so as to correlate these factors in the various grades. Field studies to determine the effect of time of cutting and manner of curing on the color of hay are being pursued. Chemical analyses are being made to determine the nutriments in the several grades and kinds of hay. The project is now in a position to train men to become Federal hay inspectors and through this course of training bring about greater uniformity in the application of tentative Federal or even of existing grades.

MARKETING DAIRY AND POULTRY PRODUCTS.

The work on dairy and poultry products comprises market investigations, service, and inspection work.

MARKET INVESTIGATIONS.

Surveys and studies of a research character are made on the marketing of dairy and poultry products, including methods and costs of marketing, market grades and standards, quotations and prices, supply, demand, and market conditions and requirements, facilities, and practices. At present special consideration is being given to the cooperative marketing of dairy and poultry products, market grades and standards for eggs and cheese, and the marketing of poultry and eggs in commercial trade channels.

Surveys have been made of the marketing of creamery butter and American cheese in the larger distributing markets and in the more important producing sections of the United States and Canada and of milk-marketing methods and conditions in the larger cities and market-milk producing areas of the United States. In cooperation with various State agencies a number of investigations have been made of the marketing of dairy products. The results of these investigations are used in a practical way in formulating the programs for market news and inspection work.

MARKET NEWS SERVICE ON DAIRY AND POULTRY PRODUCTS.

Reports are issued on the supply, demand, movement, prices, and market conditions for butter, cheese, eggs, poultry, fluid milk, condensed and evaporated milk and milk powder, and the production of manufactured milk products in the United States. These reports

Digitized by Google

are furnished to a mailing list which approximates 15,000. Many organizations and individual members of the trade rely to a great extent upon these reports for accurate data relative to the production, market supply, distribution, and values of dairy and poultry products.

In compiling and issuing these market reports, contacts are maintained with producers, manufacturers, and distributors of dairy and poultry products and with transportation and warehousing agencies. Branch offices are maintained at Boston, New York, Philadelphia, Chicago, Fond du Lac, Minneapolis, and San Francisco.

INSPECTION OF BUTTER.

Under the food products inspection law, this division inspects and certifies to producers, dealers, and shippers the quality and condition of butter at important central markets. Such service is maintained at Washington, Boston, New York, Philadelphia, Chicago, and San Francisco, and is available to producers, shippers, dealers, and buyers. During the past year over 5,000 inspection certificates were issued and the fees collected amounted to more than the appropriation for the service.

Inspections of butter are made at the request of interested parties according to certain rules and regulations promulgated in connection with the food products inspection law. Certificates are issued concerning the quality and condition of the products inspected. These certificates are prima facie evidence in the courts of the United States.

MARKETING LIVE STOCK, MEATS, AND WOOL.

The work of the live stock, meats, and wool division is carried on under two general projects, namely, market news and other services, and investigation and research.

MARKET NEWS SERVICES.

This news service was established in order to stabilize the live-stock and meat industry; to make market information equally available to all classes of persons involved in such marketing, and to equalize and facilitate distribution.

It includes live-stock market reports; meat-market reports; wool reports; periodical reports of supplies, movements, demand, price trends, and market preferences as they pertain to live stock, meats, wool, and other animal by-products; special compilations of statistical and other data for use of investigators, educators, producers, business men, and Members of Congress; and supplying to correspondents throughout the United States and in foreign countries both current and statistical data on a wide variety of subjects.

Live stock reporting offices are maintained at six of the leading middle western markets—Chicago, Kansas City, Omaha, National Stock Yards, South St. Paul, and St. Joseph, Mo., and meat-reporting offices at four of the great consuming centers—Boston, New York, Philadelphia, and Chicago.

At each of these markets is stationed a corps of experts in the commodity reported. All offices are connected with each other and

Digitized by Google

with the Washington office by a system of leased wires. At each point the market reporters are on the market practically throughout the trading day, and each files numerous dispatches at different hours of the day, such dispatches giving a picture of the state of trade and prices prevailing at the time they are filed. Each report is immediately transmitted to every office in the circuit and is promptly published in various ways. At the live-stock markets, bulletin boards are extensively used, and at each office virtually all reports are mimeographed early in the day and given wide distribution by mail. Any or all of these reports are available to anyone on request. In several States where cooperative arrangements have been made the State bureau of markets is taking our reports off the leased wire and giving them wide distribution among the producers, newspapers, and organizations which they serve.

Within the past year both the wireless telegraph and radio telephone have been utilized in disseminating this live-stock and meat-market news. At the present time many of the reports are broadcasted throughout the country from the Atlantic to the Pacific by wireless telegraph. These are picked up by a great number of individuals and institutions and rebroadcasted by radio telephone.

The wool reports are published at irregular intervals and consist of brief statements indicating supplies, demand, imports, and prevailing prices.

The division prepares many periodical reports dealing with the various phases and factors of marketing the different commodities with which we are concerned. These reports are given wide circulation through daily papers, trade journals, and departmental publications. Such reports are usually compiled on request and are intended to develop the facts pertaining to some particular phase of the industry which is being studied.

INVESTIGATION AND RESEARCH.

The objects of this work are to reach a comprehensive understanding of the present methods of marketing in all their details to use as a basis for service work, to serve as a basis of recommendations for improvement, and to carry to the people in all parts of the country the results of research and other lines of work.

The work includes a study of: Methods of marketing live stock, meats, wool, and other animal by-products; factors affecting the marketing of the above commodities such as available supplies, prospective supplies, prices, transportation, yardage, slaughter, and dressing, packing, and wholesale and retail distribution; problems of marketing, including all of the above-named agencies, together with such economic consideration as fluctuations in both supplies and price, variations in the consuming demand for the above commodities, trade preferences, competition both at home and abroad, the cost of marketing by the various methods commonly employed, together with new methods which are proposed and tried from time to time, and finally the standardization of market classes and grades of live stock, dressed meats, and wool.

This division is constantly studying not only the established methods of marketing live stock, meats, wool, and animal by-products, but maintains a lively interest in each and every one of the newer market-

Digitized by Google

ing schemes which from time to time are proposed and tried out on a limited scale. It is constantly searching for the most expeditious and economical method of getting the farmers' live stock to the table of the consumer. In making such investigations each step involved in the various methods must be studied carefully. After that a painstaking summary of the results obtained is made and on that basis one method is compared with another.

The desirability of reasonably stable markets and orderly price movements is not open to question. From time to time various plans for so stabilizing markets are proposed and tried. All of these provide legitimate subjects for careful scrutiny and study on the part of this division. With a commodity so dependent in its market movements upon weather and seasonal conditions, the difficulties involved in a proper distribution of supplies are apparent. The difficulties involved, however, make the solution of the problem no less urgent.

All of the commodities with which this division deals are handled very largely on a credit basis. Enormous amounts of money are involved and the supplying of this money in the form of credits, where, when, and in the form needed, is essential to the very life of the industry. Consequently the proper functioning of banks, loan companies, and other financial agencies, so far as their activities pertain to the live stock, meat, and wool industries, are proper subjects of interest and study on the part of this division.

Most of the factors enumerated above constitute definite and important problems of marketing. There are, however, many others. Every agency, such as the transportation company, stockyard company, commission man, packer, slaughterer, wholesale and retail meat dealer, and, it might be added, the consumer, constitutes a definite problem of marketing. If any one of these fails to function, or functions inefficiently and uneconomically, disastrous results are bound to follow. With each of these the division of live stock, meats, and wool is vitally concerned and is constantly studying them with a view to developing greater efficiency and reducing cost.

The consumer constitutes a problem because of his constantly shifting preferences. At one time he wants beef and at another pork. On occasion there is an urgent demand for veal, which presently may be largely supplanted by an active call for lamb. At times and in certain localities a majority of the consumers want heavy, fat, and finished beef; at other times and in other places there is virtually no demand for such beef.

If the producer of meat animals is to conduct his business successfully, he must keep in close touch with these changes in the consumptive demand. By maintaining a continued, careful study of market and trade conditions this division assists the producers in detecting these shifts in demand at the earliest possible moment.

The producer is constantly in competition with producers in other countries. Through the importation of meat and animal by-products into the United States this competition is brought into the domestic market. In foreign countries where the American producer markets a considerable part of his products, this competition is still keener.

By publishing promptly all the information available regarding importations, not only into this country, but also into foreign markets in which this country is interested, this division assists the pro-

Digitized by Google

ducer in gauging the kind and amount of competition which he must meet.

One of the greatest difficulties with which the live-stock, meat, and wool industries have had to contend is the lack of standardized market classes and grades. After a careful study of the situation the division has formulated and promulgated tentative classifications for each of these commodities.

WAREHOUSE INVESTIGATIONS.

The warehouse division conducts research work in regard to warehousing and administers the United States warehouse act. Work under this act has increased greatly under the adverse agricultural and credit conditions of the past year.

WAREHOUSE RESEARCH.

Study is made of the standards for cotton warehouses recommended by insurance underwriters' associations, including costs and adaptability. Special attention is given to State warehouse systems and to cooperative storage companies, with the view of aiding such systems and organizations where possible. Investigations are made to determine the relation of warehouse facilities to the financing of the cotton crop and the interest rates on money loaned on cotton, and the relation of the various methods and practices of compressing cotton to storage capacity, insurance rates, and economy in handling and transportation. These studies are made in the entire Cotton Belt. Tests are made to determine to what extent exposure of baled cotton to adverse weather conditions affects its value and to determine the proper methods of drying, picking, or brushing damaged cotton with minimum loss and labor costs.

UNITED STATES WAREHOUSE ACT.

The objects of most of the work under the warehouse act are to inspect and classify warehouses applying for licenses under the United States warehouse act; to license warehouses that are found to be suitable for the proper storage of cotton, grains, flaxseed, wool, and tobacco; to license qualified persons to classify and certificate any agricultural product or products stored or to be stored in a warehouse licensed under this act, according to grade or weight; to license any person not a warehouseman to accept custody of cotton, grains, flaxseed, wool, and tobacco, and to store them in a warehouse owned or operated by any State; to prescribe the duties of warehousemen licensed by the Secretary of Agriculture; to make rules and regulations for carrying out the provisions of the United States warehouse act, and to prescribe the conditions of the bond required of licensed warehousemen; to establish and promulgate standards for those agricultural products defined in the act that are not already standardized.

Studies are made of the practices of warehousemen in order to make rules and regulations for carrying out the provisions of the warehouse act. Forms for applications and inspections are drafted. When warehousemen or weighers and classifiers apply for licenses

Digitized by Google

under the act, inspections and examinations are made to determine whether the warehouses are suitable for the proper storage of agricultural products and to determine whether the applicants for licenses are capable of performing their duties. Such inspections as may seem necessary are made in order to classify warehouses in accordance with the provisions of the act.

The progress made under the United States warehouse act since April 1, 1921, is striking proof of the function it is performing in the marketing of agricultural products. The following table shows this progress:

Kind of warehouse.	Apr. 1, 1920.		Apr. 1, 1921.		May 1, 1922.	
	Number.	Capacity.	Number.	Capacity.	Number.	Capacity.
Cotton.....bales..	23	40,050	238	429,975	268	1,211,695
Grain.....bushels..	5	136,000	56	2,108,400	265	14,218,900
Wool.....pounds..	0	0	5	24,375,000	18	27,500,000
Tobacco.....do....	0	0	0	0	14	68,305,000

On May 21 the capacity of licensed cotton warehouses was sufficient to accommodate about 31 per cent of the cotton which is in storage at any one time. Practically all of them but one are located in cotton-producing territory. The licensed capacity of grain warehouses on May 1, 1922, was seven times that existing on April 1, 1921, and practically all of these warehouses were located in grain-producing territory. The wool warehouses licensed under the Federal statute during the past year took care of more than one-seventh of the entire wool clip of the country. Within the past six months tobacco warehouses have been licensed, with capacity to accommodate more than 68,000,000 pounds of tobacco, and every one of the licensed tobacco warehouses is located in tobacco-producing territory.

Although the United States warehouse act is a regulatory statute it is not mandatory, and therein lies one of its greatest assets. It at once makes it possible for the Secretary of Agriculture to license only warehouses which will give full protection to the commodities stored and the management of which is competent and financially and morally responsible. It makes for the issuance of a warehouse receipt or credit instrument possessing the greatest collateral value. Furthermore, being a Federal statute, it is nation-wide in its scope, and therefore bankers from one end of the country to the other can easily familiarize themselves with its requirements.

CITY MARKETS.

The work relating to city markets includes a study of markets of various types in cities of various sizes; the making of recommendations to inquiring cities as to plans for markets, improvements, administrations, rules, and regulations; and the administration of Center Market, Washington, D. C.

When funds are availabie actual first-hand studies are made in various cities under various conditions and questionnaire studies are made. Results are made available in publications and correspondence.

Digitized by Google

Center Market, Washington, D. C., is now available for intensive study in regard to administration, and for comparative studies of methods of wholesaling, retailing, prices, farmer preferences, consumer preferences, etc., as it is now Federally controlled by action of Congress.

After a quiescent period cities are now becoming interested in building operations again and the bureau is receiving requests from farmers' organizations, civic organizations, chambers of commerce, and similar bodies asking advice regarding the establishment, location, and management of open and curb markets and for plans for inclosed markets.

Such local markets are often most valuable to farmers as supplementary outlets in the case of large output or as the sole outlet in case of smaller production by farmers who wish to retain ownership and control of products until sale. They are also often valuable supplementary sources of food supply for cities, especially for those consumers who are willing to undergo the inconveniences of direct marketing for the sake of securing more variety, fresher goods, and somewhat lower price.

COST OF MARKETING.

The cost of marketing division is engaged in ascertaining the specific costs of the various methods of marketing each product and in relating these costs to the particular agency and method employed. In carrying out this work it is necessary to observe a wide range of related factors and an opportunity is afforded to collect additional information which is useful for a number of purposes. From the data thus gathered the division is able to furnish a number of types of information such as:

(1) Standards for judging relative efficiency of various marketing agencies.

(2) Data for discovering the most economical combination of enterprises within a particular business unit.

(3) Data to establish the necessary costs of marketing the product. Specific margins of enough organizations to constitute a satisfactory example may be analyzed and these data can be arranged to indicate bulkline costs.

(4) Information which will assist individual marketing agencies to improve their efficiency.

(5) Information to show the costs of typical marketing channels, the services which are performed in return for these costs, and to account for the spread between what the grower receives and what the consumer pays.

Several cost studies are carried on concurrently, mostly in cooperation with commodity divisions of the bureau and also in cooperation with State institutions. Members of the staff are assigned to specific field studies and some of the same men are expected to assist in the compilation and interpretation of the data collected. A small statistical section is maintained as a nucleus around which to build an efficient force to assist the specialists in charge of specific studies.

The service work accompanies and is largely the result of the cost studies. One section is primarily useful in making possible a more careful analysis of basic cost elements and a determination of more

Digitized by Google

scientific methods in the allocation of joint costs. The other is primarily helpful in getting the results of the work before the public and in answering inquiries for specific information.

STATISTICAL AND HISTORICAL RESEARCH.

In statistical and historical research marketing is not separated from production. Marketing information, domestic and foreign, is collected, correlated, and analyzed for the purpose of giving information as to what, how much, and when farmers should produce. The wholesale and retail prices as well as farm prices are collected for the purpose of studying the trend of prices and the price relations. Consumption, exports and imports, and stocks receive attention as well as production.

Statistics and other information on prices of things that farmers buy, and supplies of commodities that farmers need, are collected for the purpose of giving information as to probable costs. The primary purpose is to furnish information that will be useful in organizing production and adjusting costs so that commodities may be produced profitably for a prospective market.

FOREIGN COMPETITION AND DEMAND.

Information and statistics covering foreign crop conditions, area and yield of the principal agricultural crops, methods of production, marketing methods, prices, consumption requirements, exports and imports, and other factors entering into the supply of and demand for American agricultural products are collected through the following agencies in foreign countries and the United States:

(1) International Institute of Agriculture at Rome; (2) foreign departments of agriculture and statistics; (3) American consular officers in foreign countries; (4) commercial attachés and trade commissioners of the Department of Commerce; (5) foreign agricultural and trade journals, newspapers, etc.; (6) commercial agencies; (7) transportation and shipping companies; and (8) commissioners of the United States Department of Agriculture.

The information and statistics are disseminated to agricultural producers, agricultural colleges, National and State agricultural associations, and others who desire such information. They are disseminated through (1) Weather, Crops, and Markets (weekly), (2) Foreign Crops and Markets (weekly), (3) monographs and bulletins (for special mailing lists), (4) press service releases, (5) weekly crop and market reviews of fruits and vegetables, (6) Yearbook of the United States Department of Agriculture (statistical), and (7) correspondence.

The Department of Agriculture is a medium for transmitting the great amount of information collected by the Department of State by means of its consular service and the Department of Commerce by means of its representatives abroad, directly to farm and marketing organizations, agricultural colleges, and farmers. It is the function of this division to supplement and to put in proper form or interpret the information collected by these departments for distribution to those most interested in agriculture.

Digitized by Google

AGRICULTURAL FINANCE.

The main subjects studied by this division are rural credit, insurance, and taxation. Most of the studies heretofore conducted fall within the first two of these subjects.

RURAL CREDIT.

A special study was recently made of resources, costs, terms, and conditions of farm-mortgage credit in the United States. A similar study was made of short-time bank loans to farmers covering amount of such loans, seasonal fluctuations, amount of rates of interest, special requirements affecting costs of loans, nature of security of such loans, terms of loans, etc.; such loans covering part were termed production credit and in part marketing credit. The results of these studies were published in bulletin form.

A study is also being made of the possibilities of cooperative short-time credit through local credit associations incorporated under suitable State laws. In this connection a careful analysis was made of existing laws relating to credit associations or credit unions, and a suggested or model law prepared and published.

At the present time a local survey of credit and insurance conditions prevailing in North Carolina is being made in cooperation with the State department of agriculture in that State. The purpose of this study is to ascertain the amount of credit obtained by farmers from various sources, banks, stores, dealers, factors, etc., and the terms and conditions involved in such credit. At the same time information is gathered on insurance facilities available to the farmer and the extent to which he avails himself of such facilities.

AGRICULTURAL INSURANCE.

Special studies have been made of farmers' mutual fire insurance in the United States. A suggested or model State law has been drafted, and organization and business forms, including suitable articles of incorporation, by-laws, policy and application forms, have been prepared and made available in a series of bulletins published. Among these bulletins is one outlining and illustrating a simple and efficient method of keeping insurance records in local mutual companies.

Some attention is also being given to farmers' mutual windstorm insurance, as well as live-stock insurance, and special studies have been made of the problem of crop insurance for the farmer. One special study of this kind was made on the special subject of hail insurance on farm crops, and another study covered general crop insurance. A summary of the study of hail insurance and results of the study covering the widespread field of crop insurance, including risks, losses, and principles of protection, have been published.

RURAL PUBLIC UTILITIES.

Within the last few months a special study has been made of the organization and financing of farmers' mutual telephone companies, as well as of costs and conditions involved in the purchase of telephone

Digitized by Google

service by farmers from existing commercial companies. The results of this study have been summarized in the form of a bulletin which has been recommended for publication. Some incidental attention is also being given to organizations among farmers for supplying themselves with electric power, either by plants of their own or by the cooperative purchase of current from larger power companies.

AGRICULTURAL COOPERATION.

Agricultural cooperation is being studied from three angles. First, attention is given to the economic significance or cooperation as applied to agriculture; second, the legal problems arising out of the new relationships brought about through cooperation are studied; and third, the data essential to a complete record of agricultural cooperation, with respect to its development through the years and its present status, is being collected, classified, and arranged for immediate and future use.

The study of the economic importance of cooperation includes a comprehensive analysis of the various functions performed by private enterprise and by cooperative effort, an evaluation of these functions, and carefully arranged comparisons for the purpose of determining the relative efficiency of the different methods of performing the various activities necessary to get farm products from producer to consumer. The study also includes a consideration of the various types and degrees of cooperative action, and the forms best suited for doing the work in question. This study is being conducted in Europe as well as the 48 States.

The study dealing with the legal problems arising out of cooperative relationships includes the collection, classification, and review of the legislative acts of the various States, and the collection, classification, and review of the many court decisions that are of importance to those who are engaged or interested in cooperation. The manuscript for a bulletin treating of the more important legal propositions relative to cooperative associations has been prepared.

Historical and statistical material dealing with agricultural cooperation is being collected, classified, and analyzed from all countries in which cooperation has been used by the rural classes as a means for obtaining constructive results.

Data are now being collected for a comprehensive directory of the agricultural cooperative organizations in the United States. It is expected that this directory will contain more than 16,000 organizations.

Material is also being collected relative to the associations which have failed that conclusions may be drawn as to the factors which militate against the success of agricultural cooperation.

These studies are being conducted that the bureau may properly conduct its service work relative to cooperation, and that it may be of as much help to those interested in this subject as possible.

LAND ECONOMICS.

The division of land economics is concerned with our land resources and utilization; land ownership and tenancy; settlement and colonization; land values and valuation; and farm labor problems.

Digitized by Google

Land in the United States is studied by systems of classification and proper methods of utilizing these different classes are studied and determined. Resources and utilization of land in foreign countries are also studied.

Methods of renting land, forms of land tenure, and the methods and rate of acquisition and disposition of farm land are subjects of study and investigation, as are methods of settlement and colonization, land agencies and land reclamation problems, land values, rent, and land taxation.

The specific problems connected with farm labor now receiving attention are supply and movement, trend of population, living and housing conditions, supervision, and compensation.

Results of these studies are set forth in bulletin form, in lectures, and in journals as rapidly as practicable.

FARM POPULATION AND RURAL LIFE.

This division is engaged in studying the farm population of the United States. To insure stable production of agricultural products, accurate knowledge of the producing population is deemed highly desirable.

The number of farm people—men, women, and children of significant age groups—in any particular region need to be known in a system of scientific agriculture. The racial composition and general characteristics of our farming communities and all the sources of replacement of farm families and individuals in such communities are legitimate subjects of our inquiry. The movements of our farm people, both of adults and adolescents, from region to region, from country to city, from farming to other occupations, must be known and reckoned with. This information the division seeks to supply.

The number of people living in the status of owners, of tenants, and of laborers, as well as the rate of progress from one status to another, is a subject within the field of the division. The division studies the cost of living of the farmer and the various standards of living of farm communities engaged in various types of agriculture.

The relation between standards of living in farm communities and the producing power of those communities is a subject of inquiry. This division tries to know, in short, how many people are engaged in farming, where they come from, what their movements are, how they are grouped, how they are organized, what facilities are accessible to them for an American type of living, what phenomena of low or high agricultural production can be traced to low or high standards of living. The economics of population so far as agriculture is concerned is the objective of the division.

INFORMATION AND EXTENSION SERVICES.

Market news and other information of immediate practical value to the public is distributed through the agencies of press release, special reports released from various branch offices on the leased-wire system; special reports from field stations, special telegrams to publications and producers' associations, and by radio broadcasting. All of these extension agencies are utilized for general distribution in

Digitized by Google

cooperation with the various extension representatives of the department. State workers, county agents, and other local workers are provided with market information through the weekly periodical, Weather, Crops, and Markets.

The recent extensive development of the use of radio for broadcasting has provided a means for sending market information to anyone prepared to receive it through the Eastern, Central and Southern States. The broadcasting from the naval radio stations at the Arlington and Great Lakes stations reaches practically all of the United States east of Denver. Through cooperation with about 40 public and private radiotelephone broadcasting stations, market news and other information is made available to individuals who are provided with receiving outfits in the principal agricultural regions of this same area. The combination of distribution through the leased-wire system and radio broadcasting has within the year made it possible for market news to be placed in the hands of producers, distributors, and others within a few hours after the information is gathered at the minimum of cost to the Federal Government.

Through exhibits and motion pictures circulated at fairs, agricultural colleges, and other meetings of producers and distributors, the results of marketing and economic investigations are popularly presented to citizens everywhere.

Digitized by Google

INDEX.

	Page.
Agencies:	
Establishment of	4, 9
Functions of	4
Margins established by	5
Risks of	5
Barley:	
Price received by producer in local markets	48
Freight on	48
Margin by local and terminal elevators	48
Price received for, at typical points	48
Bureau of Agricultural Economics:	
Marketing and related activities in	232
Organization of marketing work in	234
Divisions of	234
Chart of work in	234
Bureau of Markets and Crop Estimates:	
Organization of, in Department of Agriculture	233
Chain stores:	
Development of	206
Functions of	206
Results of commission's survey on	206
Tendency of, to manufacture products	206
Cold storage:	
A factor in primary and terminal markets	109
An economic necessity	109
Three classes of	109
Services of, in warehouses	109
Development of	109
Holdings of eggs and apples, as reported to Bureau of Markets	113
Consumers:	
Demands of	5
Unwillingness to anticipate requirements	5
Conversion:	
Definition of	14
Earlier method of	115
Improved methods of manufacturer	115
Competition of manufacturers	116
Specialty selling by manufacturer	116
Manufacturer's distribution of dollar paid by wholesaler for various products	117
Fluctuation in manufacturer's selling price	126
Items entering costs of manufacture	129
Distribution of manufacturer's dollar received for various trade-marked commodities	130
Effort of manufacturer to secure market for trade-marked products	148
Distribution of packer's dollar paid by retailer	150
Distribution of manufacturer's dollar paid by retailer for clothing and shoes	152
Cooperative associations:	
Of producers recommended	9
Results of sales through	9
State and Federal Governments to promote	10, 230
Difference between industrial corporation and	226
Purposes of	226
No standard form of	227
Obligation of members toward	227
Success of cooperation in	228
Advantage to farmers	230
Results in standardization of production	231
Organization of, should be encouraged	231
Combined in larger associations	226

Digitized by Google

	Page.
Corn:	
Prices received by producer in local markets	36
Freight on	36
Margin by local and terminal elevators	36
Price received for, at typical points	36
Cost of conversion into corn flakes	119
Cost of producing and distributing:	
Of bread	206
Of corn flakes	210
Of rolled oats	213
Factors in, of manufactured food products	214
Cotton, detail of distribution of	74
Dairy products:	
Not sufficient correlated data	74
Industry localized	74
Department of Agriculture:	
Bureau of Agricultural Economics organized in	232
Office of Markets organized in	232
Organization of Bureau of Markets and Crop Estimates	233
Growing interest in economic questions in	233
Distribution:	
Of earlier years	3
A fundamental and important problem	4
Resources developed	3
Solution of, how arrived at	4
Elements in cost of	9
Competition of manufacturers and wholesalers in	11
Schools should teach factors of	13
Definition of	15
Areas of, for fruits and vegetables	68
Car-lot, of fruits and vegetables	73
Cooperative, of fruits and vegetables	72
Classified agencies in, of fruits and vegetables	107
Comparison of cost of production and manufacture with	115
Farmers' problem of, not solved by legislation	230
Distribution of consumer's dollar:	
Among shipper, packer, and retailer for live stock	218
For men's suits, between manufacturer and retailer	219
For men's shoes, between manufacturer and retailer	222
For oranges	223
Eggs:	
Average price of	98
As a by-product	98
Production of, continuous	98
Elevator (country):	
Margins on grain	18
Handling charges at	19
Fruits and vegetables:	
Areas of production and distribution of	68
Long-haul movement of	70
Differences in seasons	70
No overlapping of stock	70
Factors influencing price to producer	70
Effect of low prices	71
Local markets	71
Grading and packing of	71
Isolated grower of, handicapped	72
Must be moved quickly	72
Cooperative, assembling and distribution of	72
Pooling of	72
Improved grades and standards of	72
Car-lot distribution of:	73
Classified agencies in distribution of	73
Method of commission merchant	107
Method of broker	108
Method of auction markets on	108
Method of wholesale jobber on	108
Cold storage of, in primary and terminal markets	109
Method of wholesaling of	107

Digitized by Google

	Page.
rain:	
Country elevator margins on, differ	18
Competition by agencies in markets of	18
Elevator margins in Northwest and Southwest	18
Handling charges at elevator of	19
Fluctuation in price of	19
More orderly marketing of, necessary	67
[edging:	
Definition of	17
Losses due to	18
egislation, Congress should reenact, regulating future trading in grain	10
ive stock:	
Detail of distribution of	74
Price per 100 pounds received by producer at various cities	76
anufacturers:	
Method of production reduced to a science	7
Distribution of dollar received by, for cost of conversion	128
Costs of services of, in conversion	129
Competitive element of	214
Costs of competition of manufactured products	215
Result of overstock of products	215
Result of duplication of products	215
Margins:	
Average, on wheat	19
Elevator, on grain	18
Marketing:	
Definition of	14
Cooperative, of potatoes	101
Cooperative, results of	227
Markets:	
Preparation of products for	4
Advantage of center markets	5
Facilities necessary for primary and terminal	6
Facilities necessary for perishable markets	6
Local, for fruits and vegetables	71
Function of primary and terminal, in regard to transportation	104
Transportation facilities of wholesale market in Chicago	105
Transportation facilities of wholesale market in New York City	106
Transportation facilities of wholesale market in Pittsburgh	106
Transportation facilities of markets in other cities	106
Method of auction markets	108
Cold storage in primary and terminal	109
Oats:	
Price received by producer in local market	58
Freight on	58
Margin by local and terminal elevators	58
Price received for, at typical points	58
Cost of conversion into rolled oats	118
Office of Markets, organization of in Department of Agriculture	232
Potatoes:	
Production of—	
Insufficient	99
In United States	99
Carload shipments of, by States	100
Methods of handling and marketing of	101
Cooperative marketing of	101
Surplus of, held in warehouses	101
Shipping of, in winter months	103
Method of city wholesaler on	103
Method of retailer on	103
Southern or early crop of	103
Poultry, handling by country packer	98
Producer:	
Risk in transit of products	5
Assumes responsibility for quality of product	6
Cooperative associations of, recommended	9
Cooperation of governmental agencies with, necessary	12

Digitized by Google

Production: Page.
- View of, by American farmer ... 4
- Must be considered in relation to consumer demands ... 5
- Result of large volume of ...
- Area of, on fruits and vegetables ... 6
- Results of better standardization and organization of ... 5

Products:
- Routine of preparation for market ... 4
- Facilities necessary for perishables ... 6
- Large amount of, in terminal products, raw material ...
- Improvement of central wholesale markets for perishables, necessary ... 12

Retailing:
- Functions of ... 162
- Outstanding defect of retailer ... 162
- Result of idle stock investment ... 162
- Retailer as purchasing agent ... 167
- Services rendered by retailers ... 165
- Competition in ... 168
- Distribution of consumers' dollar by various industries in ... 169
- Profits by retailers, in various industries ... 172
- Cost of operation of retail stores ... 176
- Factors which enter operating expense ... 176
- Fluctuating prices on specified commodities ... 177
- Total average purchase price of various grocery items ... 180
- Development of chain stores ... 204
- Number of stores in comparison to population ... 207
- Frequency of stock turn necessary to retailer ... 215

Services:
- Modern conditions demand multiplicity of ... 16
- Rendered by retailers ... 168
- Required by manufacturers in conversion of products ... 208

Standardization:
- Of production, results of ... 10
- Of products and containers an asset ... 10, 73

Transportation:
- Function of primary and terminal markets ... 104
- Facilities of—
  - In Chicago markets ... 105
  - In New York City market ... 106
  - In Pittsburgh market ... 106
  - In other cities ... 106
- Method of—
  - By wholesale operator ... 107
  - By commission merchants ... 107
  - By brokers ... 108
- Auction method of ... 108
- Method of, by wholesale jobber ... 108
- Cold storage a factor of ... 109

Warehouses:
- Establishment of, necessary ... 5
- Facilities of cold storage in ... 109
- Space of, insufficient for crops ... 113
- More systematic utilization of, necessary ... 10

Wheat:
- Average country elevator margin on ... 19
- Price received for, at typical points ... 23

Wholesaling:
- Function of wholesale grocer ... 156
- Fluctuating prices on groceries ... 158
- Average stock turn of wholesale grocer ... 156
- Cost of operation of wholesale grocer ... 159
- Wholesale grocer as purchasing agent and distributing agent ... 161
- Frequency of stock turn necessary to wholesaler ... 215

Wool, detail of distribution of ... 74

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Acme
Bookbinding Co., Inc.
300 Summer Street
Boston, Mass. 02210

Digitized by Google